

Samuel, 1992, The RNA-dependent P1/eIF-2 $\alpha$  protein kinase. In: *Interferon. Principles and Medical Applications*. S. Baron, D.H. Coopenhaver, F. Dianzani, W.R. Fleischmann Jr., T.K. Hughes Jr., G.R. Kimpel, D.W. Niesel, G.H. Stanton, and S.K. Tying, eds. 237-250; Horisberger, 1992, MX protein: function and Mechanism of Action. In: *Interferon. Principles and Medical Applications*. S. Baron, D.H. Coopenhaver, F. Dianzani, W.R. Fleischmann Jr., T.K. Hughes Jr., G.R. Kimpel, D.W. Niesel, G.H. Stanton, and S.K. Tying, eds. 215-224). Although all type I IFN have similar biologic effects, not all the activities are shared by each type I IFN, and, in many cases, the extent of activity varies quite substantially for each IFN subtype (Fish *et al.*, 1989, *J. Interferon Res.* 9, 97-114; Ozes *et al.*, 1992, *J. Interferon Res.* 12, 55-59). More specifically, investigations into the properties of different subtypes of IFN- $\alpha$  and molecular hybrids of IFN- $\alpha$  have shown differences in pharmacologic properties (Rubinstein, 1987, *J. Interferon Res.* 7, 545-551). These pharmacologic differences can arise from as few as three amino acid residue changes (Lee *et al.*, 1982, *Cancer Res.* 42, 1312-1316).

Eighty-five to 166 amino acids are conserved in the known IFN- $\alpha$  subtypes. Excluding the IFN- $\alpha$  pseudogenes, there are approximately 25 known distinct IFN- $\alpha$  subtypes. Pairwise comparisons of these nonallelic subtypes show primary sequence differences ranging from 2% to 23%. In addition to the naturally occurring IFNs, a non-natural recombinant type I interferon known as consensus interferon (CIFN) has been synthesized as a therapeutic compound (Tong *et al.*, 1997, *Hepatology* 26, 747-754).

Interferon is currently in use for at least 12 different indications including infectious and autoimmune diseases and cancer (Borden, 1992, *N. Engl. J. Med.* 326, 1491-1492). For autoimmune diseases IFN has been utilized for treatment of rheumatoid arthritis, multiple sclerosis, and Crohn's disease. For treatment of cancer IFN has been used alone or in combination with a number of different compounds. Specific types of cancers for which IFN has been used include squamous cell carcinomas, melanomas, hypernephromas, hemangiomas, hairy cell leukemia, and Kaposi's sarcoma. In the treatment of infectious diseases, IFNs increase the phagocytic activity of macrophages and cytotoxicity of lymphocytes and inhibits the propagation of cellular pathogens. Specific indications for which IFN has been used as treatment include: hepatitis B, human papillomavirus types 6 and 11 (i.e. genital warts) (Leventhal *et al.*, 1991, *N Engl J Med* 325, 613-617), chronic granulomatous disease, and hepatitis C virus.

Numerous well controlled clinical trials using IFN-alpha in the treatment of chronic HCV infection have demonstrated that treatment three times a week results in lowering of serum ALT values in approximately 50% (range 40% to 70%) of patients by the end of 6 months of therapy (Davis *et al.*, 1989, *The new England Journal of Medicine* 321, 1501-

1506; Marcellin et al., 1991, *Hepatology* 13, 393-397; Tong et al., 1997, *Hepatology* 26, 747-754; Tong et al., *Hepatology* 26, 1640-1645). However, following cessation of interferon treatment, approximately 50% of the responding patients relapsed, resulting in a "durable" response rate as assessed by normalization of serum ALT concentrations of approximately 20 to 25%. In addition, studies that have examined six months of type 1 interferon therapy using changes in HCV RNA values as a clinical endpoint have demonstrated that up to 35% of patients will have a loss of HCV RNA by the end of therapy (Tong et al., 1997, supra). However, as with the ALT endpoint, about 50% of the patients relapse six months following cessation of therapy resulting in a durable virologic response of only 12% (23). Studies that have examined 48 weeks of therapy have demonstrated that the sustained virological response is up to 25%.

Pegylated interferons, ie. interferons conjugated with polyethylene glycol (PEG), have demonstrated improved characteristics over interferon. Advantages incurred by PEG conjugation can include an improved pharmacokinetic profile compared to interferons lacking PEG, thus imparting more convenient dosing regimes, improved tolerance, and improved antiviral efficacy. Such improvements have been demonstrated in clinical studies of both polyethylene glycol interferon alfa-2a (PEGASYS, Roche) and polyethylene glycol interferon alfa-2b (VIRAIFERON PEG, PEG-INTRON, Enzon/Schering Plough).

Enzymatic nucleic acid molecules in combination with interferons and polyethylene glycol interferons have the potential to improve the effectiveness of treatment of HCV or any of the other indications discussed above. Enzymatic nucleic acid molecules targeting RNAs associated with diseases such as infectious diseases, autoimmune diseases, and cancer, can be used individually or in combination with other therapies such as interferons and polyethylene glycol interferons and to achieve enhanced efficacy.

#### Examples:

The following are non-limiting examples showing the selection, isolation, synthesis and activity of nucleic acids of the instant invention. These examples demonstrate the selection and design of Antisense, Hammerhead, DNAzyme, NCH, Amberzyme, Zinzyme or G-Cleaver ribozyme molecules and binding/cleavage sites within HBV and HCV RNA. The following examples also demonstrate the selection and design of nucleic acid decoy molecules that target HBV reverse transcriptase. The following examples also demonstrate the use of enzymatic nucleic acid molecules that cleave HCV RNA. The methods described herein represent a scheme by which nucleic acid molecules can be derived that cleave other RNA targets required for HCV replication.

#### Example 1: Identification of Potential Target Sites in Human HBV RNA

The sequence of human HBV was screened for accessible sites using a computer-folding algorithm. Regions of the RNA that did not form secondary folding structures and contained potential ribozyme and/or antisense binding/cleavage sites were identified. The sequences of these cleavage sites are shown in **Tables IV - XI**.

Example 2: Selection of Enzymatic Nucleic Acid Cleavage Sites in Human HBV RNA

Ribozyme target sites were chosen by analyzing sequences of Human HBV (accession number: AF100308.1) and prioritizing the sites on the basis of folding. Ribozymes were designed that could bind each target and were individually analyzed by computer folding (Christoffersen *et al.*, 1994 *J. Mol. Struct. Theochem*, 311, 273; Jaeger *et al.*, 1989, *Proc. Natl. Acad. Sci. USA*, 86, 7706) to assess whether the ribozyme sequences fold into the appropriate secondary structure. Those ribozymes with unfavorable intramolecular interactions between the binding arms and the catalytic core were eliminated from consideration. As noted herein, varying binding arm lengths can be chosen to optimize activity. Generally, at least 5 bases on each arm are able to bind to, or otherwise interact with, the target RNA.

Example 3: Chemical Synthesis and Purification of Ribozymes and Antisense for Efficient Cleavage and/or blocking of HBV RNA

Ribozymes and antisense constructs were designed to anneal to various sites in the RNA message. The binding arms of the ribozymes are complementary to the target site sequences described above, while the antisense constructs are fully complementary to the target site sequences described above. The ribozymes and antisense constructs were chemically synthesized. The method of synthesis used followed the procedure for normal RNA synthesis as described above and in Usman *et al.*, (1987 *J. Am. Chem. Soc.*, 109, 7845), Scaringe *et al.*, (1990 *Nucleic Acids Res.*, 18, 5433) and Wincott *et al.*, *supra*, and made use of common nucleic acid protecting and coupling groups, such as dimethoxytrityl at the 5'-end, and phosphoramidites at the 3'-end. The average stepwise coupling yields were typically >98%.

Ribozymes and antisense constructs were also synthesized from DNA templates using bacteriophage T7 RNA polymerase (Milligan and Uhlenbeck, 1989, *Methods Enzymol.* 180, 51). Ribozymes and antisense constructs were purified by gel electrophoresis using general methods or were purified by high pressure liquid chromatography (HPLC; see Wincott *et al.*, *supra*; the totality of which is hereby incorporated herein by reference) and were resuspended in water. The sequences of the chemically synthesized ribozymes used in this study are shown below in **Table XI**.

Example 4: Ribozyme Cleavage of HBV RNA Target *in vitro*

Ribozymes targeted to the human HBV RNA are designed and synthesized as described above. These ribozymes can be tested for cleavage activity *in vitro*, for example using the following procedure. The target sequences and the nucleotide location within the HBV RNA are given in Tables IV-XI.

*Cleavage Reactions:* Full-length or partially full-length, internally-labeled target RNA for ribozyme cleavage assay is prepared by *in vitro* transcription in the presence of [ $\alpha$ - $^{32}$ P] CTP, passed over a G 50 Sephadex® column by spin chromatography and used as substrate RNA without further purification. Alternately, substrates are 5'- $^{32}$ P-end labeled using T4 polynucleotide kinase enzyme. Assays are performed by pre-warming a 2X concentration of purified ribozyme in ribozyme cleavage buffer (50 mM Tris-HCl, pH 7.5 at 37°C, 10 mM MgCl<sub>2</sub>) and the cleavage reaction was initiated by adding the 2X ribozyme mix to an equal volume of substrate RNA (maximum of 1-5 nM) that was also pre-warmed in cleavage buffer. As an initial screen, assays are carried out for 1 hour at 37°C using a final concentration of either 40 nM or 1 mM ribozyme, *i.e.*, ribozyme excess. The reaction is quenched by the addition of an equal volume of 95% formamide, 20 mM EDTA, 0.05% bromophenol blue and 0.05% xylene cyanol after which the sample is heated to 95°C for 2 minutes, quick chilled and loaded onto a denaturing polyacrylamide gel. Substrate RNA and the specific RNA cleavage products generated by ribozyme cleavage are visualized on an autoradiograph of the gel. The percentage of cleavage is determined by Phosphor Imager® quantitation of bands representing the intact substrate and the cleavage products.

Example 5: Transfection of HepG2 Cells with psHBV-1 and Ribozymes

The human hepatocellular carcinoma cell line Hep G2 was grown in Dulbecco's modified Eagle media supplemented with 10% fetal calf serum, 2 mM glutamine, 0.1 mM nonessential amino acids, 1 mM sodium pyruvate, 25 mM Hepes, 100 units penicillin, and 100 µg/ml streptomycin. To generate a replication competent cDNA, prior to transfection the HBV genomic sequences are excised from the bacterial plasmid sequence contained in the psHBV-1 vector (Those skilled in the art understand that other methods may be used to generate a replication competent cDNA). This was done with an EcoRI and Hind III restriction digest. Following completion of the digest, a ligation was performed under dilute conditions (20 µg/ml) to favor intermolecular ligation. The total ligation mixture was then concentrated using Qiagen spin columns.

Secreted alkaline phosphatase (SEAP) was used to normalize the HBsAg levels to control for transfection variability. The pSEAP2-TK control vector was constructed by ligating a Bgl II-Hind III fragment of the pRL-TK vector (Promega), containing the herpes



simplex virus thymidine kinase promoter region, into *Bgl* II/*Hind* III digested pSEAP2-Basic (Clontech). Hep G2 cells were plated ( $3 \times 10^4$  cells/well) in 96-well microtiter plates and incubated overnight. A lipid/DNA/ribozyme complex was formed containing (at final concentrations) cationic lipid (15  $\mu$ g/ml), prepared psHBV-1 (4.5  $\mu$ g/ml), pSEAP2-TK (0.5  $\mu$ g/ml), and ribozyme (100  $\mu$ M). Following a 15 min. incubation at 37° C, the complexes were added to the plated Hep G2 cells. Media was removed from the cells 96 hr. post-transfection for HBsAg and SEAP analysis.

Transfection of the human hepatocellular carcinoma cell line, Hep G2, with replication competent HBV DNA results in the expression of HBV proteins and the production of virions. To investigate the potential use of ribozymes for the treatment of chronic HBV infection, a series of ribozymes that target the 3' terminus of the HBV genome have been synthesized. Ribozymes targeting this region have the potential to cleave all four major HBV RNA transcripts as well as the potential to block the production of HBV DNA by cleavage of the pregenomic RNA. To test the efficacy of these HBV ribozymes, they were co-transfected with HBV genomic DNA into Hep G2 cells, and the subsequent levels of secreted HBV surface antigen (HBsAg) were analyzed by ELISA. To control for variability in transfection efficiency, a control vector which expresses secreted alkaline phosphatase (SEAP), was also co-transfected. The efficacy of the HBV ribozymes was determined by comparing the ratio of HBsAg:SEAP and/or HBeAg:SEAP to that of a scrambled attenuated control (SAC) ribozyme. Twenty-five ribozymes (RPI18341, RPI18356, RPI18363, RPI18364, RPI18365, RPI18366, RPI18367, RPI18368, RPI18369, RPI18370, RPI18371, RPI18372, RPI18373, RPI18374, RPI18303, RPI18405, RPI18406, RPI18407, RPI18408, RPI18409, RPI18410, RPI18411, RPI18418, RPI18419, and RPI18422) have been identified which cause a reduction in the levels of HBsAg and/or HBeAg as compared to the corresponding SAC ribozyme. In addition, loop variant anti-HBV ribozymes targeting site 273 were tested using this system, the results of this study are summarized in **Figure 10**. As indicated in the figure, the ribozymes tested demonstrate significant reduction in HepG2 HBsAg levels as compared to a scrambled attenuated core ribozyme control, with RPI 22650 and RPI 22649 showing the greatest decrease in HBsAg levels.

#### Example 6: Analysis of HBsAg and SEAP Levels Following Ribozyme Treatment

Immulon 4 (Dynax) microtiter wells were coated overnight at 4° C with anti-HBsAg Mab (Biostride B88-95-31ad,ay) at 1  $\mu$ g/ml in Carbonate Buffer (Na<sub>2</sub>CO<sub>3</sub> 15 mM, NaHCO<sub>3</sub> 35 mM, pH 9.5). The wells were then washed 4x with PBST (PBS, 0.05% Tween® 20) and blocked for 1 hr at 37° C with PBST, 1% BSA. Following washing as above, the wells were dried at 37° C for 30 min. Biotinylated goat anti-HBsAg (Accurate YVS1807) was diluted 1:1000 in PBST and incubated in the wells for 1 hr. at 37° C. The wells were washed 4x with

PBST. Streptavidin/Alkaline Phosphatase Conjugate (Pierce 21324) was diluted to 250 ng/ml in PBST, and incubated in the wells for 1 hr. at 37° C. After washing as above, p-nitrophenyl phosphate substrate (Pierce 37620) was added to the wells, which were then incubated for 1 hr. at 37° C. The optical density at 405 nm was then determined. SEAP levels were assayed using the Great EscApe® Detection Kit (Clontech K2041-1), as per the manufacturers instructions.

#### Example 7: X-gene Reporter Assay

The effect of ribozyme treatment on the level of transactivation of a SV40 promoter driven firefly luciferase gene by the HBV X-protein was analyzed in transfected Hep G2 cells. As a control for variability in transfection efficiency, a Renilla luciferase reporter driven by the TK promoter, which is not transactivated by the X protein, was used. Hep G2 cells were plated ( $3 \times 10^4$  cells/well) in 96-well microtiter plates and incubated overnight. A lipid/DNA/ribozyme complex was formed containing (at final concentrations) cationic lipid (2.4 µg/ml), the X-gene vector pSBDR (2.5 µg/ml), the firefly reporter pSV40HCVluc (0.5 µg/ml), the Renilla luciferase control vector pRL-TK (0.5 µg/ml), and ribozyme (100 µM). Following a 15 min. incubation at 37° C, the complexes were added to the plated Hep G2 cells. Levels of firefly and Renilla luciferase were analyzed 48 hr. post transfection, using Promega's Dual-Luciferase Assay System.

The HBV X protein is a transactivator of a number of viral and cellular genes. Ribozymes which target the X region were tested for their ability to cause a reduction in X protein transactivation of a firefly luciferase gene driven by the SV40 promoter in transfected Hep G2 cells. As a control for transfection variability, a vector containing the Renilla luciferase gene driven by the TK promoter, which is not activated by the X protein, was included in the co-transfections. The efficacy of the HBV ribozymes was determined by comparing the ratio of firefly luciferase: Renilla luciferase to that of a scrambled attenuated control (SAC) ribozyme. Eleven ribozymes (RPI18365, RPI18367, RPI18368, RPI18371, RPI18372, RPI18373, RPI18405, RPI18406, RPI18411, RPI18418, RPI18423) were identified which cause a reduction in the level of transactivation of a reporter gene by the X protein, as compared to the corresponding SAC ribozyme.

#### Example 8: HBV transgenic mouse study A

A transgenic mouse strain (founder strain 1.3.32 with a C57B1/6 background) that expresses HBV RNA and forms HBV viremia (Morrey *et al.*, 1999, *Antiviral Res.*, 42, 97-108; Guidotti *et al.*, 1995, *J. Virology*, 69, 10, 6158-6169) was utilized to study the *in vivo* activity of ribozymes (RPI.18341, RPI.18371, RPI.18372, and RPI.18418) of the instant invention. This model is predictive in screening for anti-HBV agents. Ribozyme or the

equivalent volume of saline was administered via a continuous s.c. infusion using Alzet® mini-osmotic pumps for 14 days. Alzet® pumps were filled with test material(s) in a sterile fashion according to the manufacturer's instructions. Prior to *in vivo* implantation, pumps were incubated at 37°C overnight ( $\geq 18$  hours) to prime the flow modulators. On the day of surgery, animals were lightly anesthetized with a ketamine/xylazine cocktail (94 mg/kg and 6 mg/kg, respectively; 0.3 ml, IP). Baseline blood samples (200  $\mu$ l) were obtained from each animal *via* a retro-orbital bleed. For animals in groups 1-5 (Table XII), a 2 cm area near the base of the tail was shaved and cleansed with betadine surgical scrub and sequentially with 70% alcohol. A 1 cm incision in the skin was made with a #15 scalpel blade or a blunt pair of scissors near the base of the tail. Forceps were used to open a pocket rostrally (*ie.*, towards the head) by spreading apart the subcutaneous connective tissue. The pump was inserted with the delivery portal pointing away from the incision. Wounds were closed with sterile 9-mm stainless steel clips or with sterile 4-0 suture. Animals were then allowed to recover from anesthesia on a warm heating pad before being returned to their cage. Wounds were checked daily. Clips or sutures were replaced as needed. Incisions typically healed completely within 7 days post-op. Animals were then deeply anesthetized with the ketamine/xylazine cocktail (150 mg/kg and 10 mg/kg, respectively; 0.5 ml, IP) on day 14 post pump implantation. A midline thoracotomy/ laparotomy was performed to expose the abdominal cavity and the thoracic cavity. The left ventricle was cannulated at the base and animals exsanguinated using a 23G needle and 1 ml syringe. Serum was separated, frozen and analyzed for HBV DNA and antigen levels. Experimental groups were compared to the saline control group in respect to percent change from day 0 to day 14. HBV DNA was assayed by quantitative PCR.

## Results

Table XII is a summary of the group designation and dosage levels used in this HBV transgenic mouse study. Baseline blood samples were obtained *via* a retroorbital bleed and animals (N=10/group) received anti-HBV ribozymes (100 mg/kg/day) as a continuous SC infusion. After 14 days, animals treated with a ribozyme targeting site 273 (RPI.18341) of the HBV RNA showed a significant reduction in serum HBV DNA concentration, compared to the saline treated animals as measured by a quantitative PCR assay. More specifically, the saline treated animals had a 69% increase in serum HBV DNA concentrations over this 2-week period while treatment with the 273 ribozyme (RPI.18341) resulted in a 60% decrease in serum HBV DNA concentrations. Ribozymes directed against sites 1833 (RPI.18371), 1873 (RPI.18418), and 1874 (RPI.18372) decreased serum HBV DNA concentrations by 49%, 15% and 16%, respectively.

### Example 9: HBV transgenic mouse study B

A transgenic mouse strain (founder strain 1.3.32 with a C57B1/6 background) that expresses HBV RNA and forms HBV viremia (Morrey *et al.*, 1999, *Antiviral Res.*, 42, 97-108; Guidotti *et al.*, 1995, *J. Virology*, 69, 10, 6158-6169) was utilized to study the *in vivo* activity of ribozymes (RPL18341 and RPL18371) of the instant invention. This model is predictive in screening for anti-HBV agents. Ribozyme or the equivalent volume of saline was administered via a continuous s.c. infusion using Alzet® mini-osmotic pumps for 14 days. Alzet® pumps were filled with test material(s) in a sterile fashion according to the manufacturer's instructions. Prior to *in vivo* implantation, pumps were incubated at 37°C overnight ( $\geq 18$  hours) to prime the flow modulators. On the day of surgery, animals were lightly anesthetized with a ketamine/xylazine cocktail (94 mg/kg and 6 mg/kg, respectively; 0.3 ml, IP). Baseline blood samples (200  $\mu$ l) were obtained from each animal *via* a retro-orbital bleed. For animals in groups 1-10 (Table XIII), a 2 cm area near the base of the tail was shaved and cleansed with betadine surgical scrub and sequentially with 70% alcohol. A 1 cm incision in the skin was made with a #15 scalpel blade or a blunt pair of scissors near the base of the tail. Forceps were used to open a pocket rostrally (*ie.*, towards the head) by spreading apart the subcutaneous connective tissue. The pump was inserted with the delivery portal pointing away from the incision. Wounds were closed with sterile 9-mm stainless steel clips or with sterile 4-0 suture. Animals were then allowed to recover from anesthesia on a warm heating pad before being returned to their cage. Wounds were checked daily. Clips or sutures were replaced as needed. Incisions typically healed completely within 7 days post-op. Animals were then deeply anesthetized with the ketamine/xylazine cocktail (150 mg/kg and 10 mg/kg, respectively; 0.5 ml, IP) on day 14 post pump implantation. A midline thoracotomy/ laparotomy was performed to expose the abdominal cavity and the thoracic cavity. The left ventricle was cannulated at the base and animals exsanguinated using a 23G needle and 1 ml syringe. Serum was separated, frozen and analyzed for HBV DNA and antigen levels. Experimental groups were compared to the saline control group in respect to percent change from day 0 to day 14. HBV DNA was assayed by quantitative PCR. Additionally, mice treated with 3TC® by oral gavage at a dose of 300 mg/kg/day for 14 days (group 11, Table XIII) were used as a positive control.

## Results

Table XIII is a summary of the group designation and dosage levels used in this HBV transgenic mouse study. Baseline blood samples were obtained *via* a retroorbital bleed and animals (N=15/group) received anti-HBV ribozymes (100 mg/kg/day, 30 mg/kg/day, 10 mg/kg/day) as a continuous SC infusion. The results of this study are summarized in Figures 6, 7, and 8. As Figures 6, 7, and 8 demonstrate, Ribozymes directed against sites 273 (RPI.18341) and 1833 (RPI.18371) demonstrate reduction in the serum HBV DNA levels following 14 days of ribozyme treatment in HBV transgenic mice, as compared to scrambled attenuated core (SAC) ribozyme and saline controls. Furthermore, these ribozymes provide similar, and in some cases, greater reduction of serum HBV DNA levels, as compared to the 3TC® positive control, at lower doses than the 3TC® positive control.

### Example 10: HBV DNA reduction in HepG2.2.15 cells

Ribozyme treatment of HepG2.2.15 cells was performed in a 96-well plate format, with 12 wells for each different ribozyme tested (RPI.18341, RPI.18371, RPI.18372, RPI.18418, RPI.20599SAC). HBV DNA levels in the media collected between 120 and 144 hours following transfection was determined using the Roche Amplicor HBV Assay. Treatment with RPI.18341 targeting site 273 resulted in a significant ( $P<0.05$ ) decrease in HBV DNA levels of 62% compared to the SAC (RPI.20599). Treatment with RPI.18371 (site 1833) or RPI.18372 (site 1874) resulted in reductions in HBV DNA levels of 55% and 58% respectively, as compared to treatment with the SAC RPI.20599 (see Figure 9).

### Example 11: RPI 18341 combination treatment with Lamivudine/Infergen®

The therapeutic use of nucleic acid molecules of the invention either alone or in combination with current therapies, for example lamivudine or type 1 IFN, can lead to improved HBV treatment modalities. To assess the potential of combination therapy, HepG2 cells transfected with a replication competent HBV cDNA, were treated with RPI 18341(HepBzyme™), Infergen® (Amgen, Thousand Oaks Ca), and/or Lamivudine (Epivir®: GlaxoSmithKline, Research Triangle Park NC) either alone or in combination. Results indicated that combination treatment with either RPI 18341 plus Infergen® or combination of RPI 18341 plus lamivudine results in additive down regulation of HBsAg expression ( $P<0.001$ ). These studies can be applied to the treatment of lamivudine resistant cells to further assess the potential for combination therapy of RPI 18341 plus currently available therapies for the treatment of chronic Hepatitis B.

Hep G2 cells were plated (2 x 10<sup>4</sup> cells/well) in 96-well microtiter plates and incubated overnight. A cationic lipid/DNA/ribozyme complex was formed containing (at final

concentrations) lipid (11-15  $\mu\text{g/mL}$ ), re-ligated psHBV-1 (4.5  $\mu\text{g/mL}$ ) and ribozyme (100-200 nM) in growth media. Following a 15 min incubation at 37°C, 20  $\mu\text{L}$  of the complex was added to the plated Hep G2 cells in 80  $\mu\text{L}$  of growth media minus antibiotics. For combination treatment with interferon, interferon (Infergen®, Amgen, Thousand Oaks CA) was added at 24 hr post-transfection and then incubated for an additional 96 hr. In the case of co-treatment with Lamivudine (3TC®), the ribozyme-containing cell culture media was removed at 120 hr post-transfection, fresh media containing Lamivudine (Epivir®: GlaxoSmithKline, Research Triangle Park NC) was added, and then incubated for an additional 48 hours. Treatment with Lamivudine or interferon individually was done on Hep G2 cells transfected with the psHBV-1 vector alone and then treated identically to the co-treated cells. All transfections were performed in triplicate. Analysis of HBsAg levels was performed using the Diasorin HBsAg ELISA kit.

### Results

At either 500 or 1000 units of Infergen®, the addition of 200 nM of RPI.18341 results in a 75-77% increase in anti-HBV activity as judged by the level of HBsAg secreted from the treated Hep G2 cells. Conversely, the anti-HBV activity of RPI.18341(at 200 nM) is increased 31-39% when used in combination of 500 or 1000 units of Infergen® (Figure 11).

At 25 nM Lamivudine (3TC®), the addition of 100 nM of RPI.18341 results in a 48% increase in anti-HBV activity as judged by the level of HBsAg secreted from treated Hep G2 cells. Conversely, the anti-HBV activity of RPI.18341 (at 100 nM) is increased 31% when used in combination with 25 nM Lamivudine (Figure 12).

### Example 13: Modulation of HBV reverse transcriptase

The HBV reverse transcriptase (pol) binds to the 5' stem-loop structure in the HBV pregenomic RNA and synthesizes a four-nucleotide primer from the template UUCA. The reverse transcriptase then translocates to the 3' end of the pregenomic RNA where the primer binds to the UUCA sequence within the DR1 element and begins first-strand synthesis of HBV DNA. A number of short oligos, ranging in size from 4 to 16-mers, were designed to act as competitive inhibitors of the HBV reverse transcriptase primer, either by blocking the primer binding sites on the HBV RNA or by acting as a decoy.

The oligonucleotides and controls were synthesized in all 2'-O-methyl and 2'-O-allyl versions (Table XV). The inverse sequence of all oligos were generated to serve as controls. Primary screening of the competitive inhibitors was completed in the HBsAg transfection/ELISA system, in which the oligo is co-transfected with a HBV cDNA vector into Hep G2 cells. Following 4 days of incubation, the levels of HBsAg secreted into the cell

culture media were determined by ELISA. Screening of the 2'-O-allyl versions revealed that two of the decoy oligos (RPI.24944 and RPI.24945), consisting of 3x or 4x repeats of the RT primer binding site UUCA, along with the matched inverse controls, displayed considerable activity by decreasing HBsAg levels (**Figure 15**). This dramatic decrease in HBsAg levels is not due to cellular toxicity, because a MTS assay showed no difference in proliferation between any of the treated cells. A follow up experiment with a 5x UUCA repeat, the inverse sequence control, and a matched scrambled control, showed that all three oligos decreased HBsAg levels without cellular toxicity. Screening of the 2'-O-methyl versions of the oligos showed no activity from the 3x and 4x UUCA repeat (**Figure 16**), also suggesting that the anti-HBV effect is perhaps related to the 2'-O-allyl chemistry rather than to sequence specificity.

Screening of the 2'-O-methyl oligos did show that the 2'-O-methyl 2x UUCA repeat, RPI.24986, displayed activity in decreasing HBsAg levels as compared to the inverse control, RPI.24950. A dose response experiment showed that at the lower concentrations of 100 and 200 nM, RPI.24986 showed greater activity in decreasing HbsAg levels as compared to the inverse control RPI.24950 (**Figure 17**).

Example 14: Modulation of HBV transcription via Oligonucleotides targeting the Enhancer I core region of HBV DNA

In an effort to block HBV replication, oligonucleotides were designed to bind to two liver-specific factor binding sites in the Enhancer I core region of HBV genomic DNA. Hepatocyte Nuclear Factor 3 (HNF3) and Hepatocyte Nuclear Factor 4 (HNF4) bind to sites in the core region, with the HNF3 site being 5' to the HNF4 site. The HNF3 and HNF4 sites overlap or are adjacent to binding sites for a number of more ubiquitous factors, and are termed nuclear receptor response elements (NRRE). These elements are critical in regulating HBV transcription and replication in infected hepatocytes, with mutations in the HNF3 and HNF4 binding sites having been demonstrated to greatly reduce the levels of HBV replication (Bock *et al.*, 2000, *J. Virology*, 74, 2193)

Oligonucleotides (**Table XV**) were designed to bind to either the positive or negative strands of the HNF3 or HNF4 binding sites. Scrambled controls were made to match each oligo. Each oligo was synthesized in all 2'-O-methyl/all phosphorothioate, or all 2'-O-allyl/all phosphorothioate chemistries. The initial screening of the oligos was done in the HBsAg transfection/ELISA system in Hep G2 cells. RPI.25654, which targets the negative strand of the HNF4 binding site, shows greater activity in reducing HBsAg levels as compared to RPI.25655, which targets the HNF4 site positive strand, and the scrambled control RPI.25656. This result was observed at both 200 and 400 nM (**Figures 18 and 19**).

In a follow-up study, RPI.25654 reduced HBsAg levels in a dose-dependent manner, from 50-200 nM (Figure 20).

Example 15: Transfection of HepG2 Cells with psHBV-1 and Nucleic acid

The human hepatocellular carcinoma cell line Hep G2 was grown in Dulbecco's modified Eagle media supplemented with 10% fetal calf serum, 2 mM glutamine, 0.1 mM nonessential amino acids, 1 mM sodium pyruvate, 25 mM Hepes, 100 units penicillin, and 100 µg/ml streptomycin. To generate a replication competent cDNA, prior to transfection the HBV genomic sequences are excised from the bacterial plasmid sequence contained in the psHBV-1 vector. This was done with an EcoRI and Hind III restriction digest. Following completion of the digest, a ligation was performed under dilute conditions (20 µg/ml) to favor intermolecular ligation. The total ligation mixture was then concentrated using Qiagen spin columns. One skilled in the art would realize that other methods can be used to generate a replication competent cDNA.

Secreted alkaline phosphatase (SEAP) was used to normalize the HBsAg levels to control for transfection variability. The pSEAP2-TK control vector was constructed by ligating a Bgl II-Hind III fragment of the pRL-TK vector (Promega), containing the herpes simplex virus thymidine kinase promoter region, into Bgl II/Hind III digested pSEAP2-Basic (Clontech). Hep G2 cells were plated ( $3 \times 10^4$  cells/well) in 96-well microtiter plates and incubated overnight. A lipid/DNA/nucleic acid complex was formed containing (at final concentrations) cationic lipid (15 µg/ml), prepared psHBV-1 (4.5 µg/ml), pSEAP2-TK (0.5 µg/ml), and nucleic acid (100 µM). Following a 15 min. incubation at 37° C, the complexes were added to the plated Hep G2 cells. Media was removed from the cells 96 hr. post-transfection for HBsAg and SEAP analysis.

Transfection of the human hepatocellular carcinoma cell line, Hep G2, with replication competent HBV DNA results in the expression of HBV proteins and the production of virions.

Example 16: Analysis of HBsAg and SEAP Levels Following Nucleic Acid Treatment

Immulon 4 (Dynax) microtiter wells were coated overnight at 4° C with anti-HBsAg Mab (Biostride B88-95-31ad,ay) at 1 µg/ml in Carbonate Buffer (Na<sub>2</sub>CO<sub>3</sub> 15 mM, NaHCO<sub>3</sub> 35 mM, pH 9.5). The wells were then washed 4x with PBST (PBS, 0.05% Tween® 20) and blocked for 1 hr at 37° C with PBST, 1% BSA. Following washing as above, the wells were dried at 37° C for 30 min. Biotinylated goat anti-HBsAg (Accurate YVS1807) was diluted 1:1000 in PBST and incubated in the wells for 1 hr. at 37° C. The wells were washed 4x with PBST. Streptavidin/Alkaline Phosphatase Conjugate (Pierce 21324) was diluted to 250



ng/ml in PBST, and incubated in the wells for 1 hr. at 37° C. After washing as above, p-nitrophenyl phosphate substrate (Pierce 37620) was added to the wells, which were then incubated for 1 hr. at 37° C. The optical density at 405 nm was then determined. SEAP levels were assayed using the Great EscAPE® Detection Kit (Clontech K2041-1), as per the manufacturers instructions.

#### Example 17: Analysis of HBV DNA expression a HepG2.2.15 murine model

The development of new antiviral agents for the treatment of chronic Hepatitis B has been aided by the use of animal models that are permissive to replication of related Hepadnaviridae such as Woodchuck Hepatitis Virus (WHV) and Duck Hepatitis Virus (DHV). In addition, the use of transgenic mice has also been employed. The human hepatoblastoma cell line, HepG2.2.15, implanted as a subcutaneous (SC) tumor, can be used to produce Hepatitis B viremia in mice. This model is useful for evaluating new HBV therapies. Mice bearing HepG2.2.15 SC tumors show HBV viremia. HBV DNA can be detected in serum beginning on Day 35. Maximum serum viral levels reach  $1.9 \times 10^5$  copies/mL by day 49. A study also determined that the minimum tumor volume associated with viremia was 300 mm<sup>3</sup>. Therefore, the HepG2.2.15 cell line grown as a SC tumor produces a useful model of HBV viremia in mice. This new model can be suitable for evaluating new therapeutic regimens for chronic Hepatitis B.

HepG2.2.15 tumor cells contain a slightly truncated version of viral HBV DNA and sheds HBV particles. The purpose of this study was to identify what time period viral particles are shed from the tumor. Serum was analyzed for presence of HBV DNA over a time course after HepG2.2.15 tumor inoculation in Athymic Ncr nu/nu mice. HepG2.2.15 cells were carried and expanded in DMEM/10% FBS/2.4% HEPES/1% NEAA/1% Glutamine/1% Sodium Pyruvate media. Cells were resuspended in Delbecco's PBS with calcium/magnesium for injection. One hundred microliters of the tumor cell suspension (at a concentration of  $1 \times 10^8$  cells/mL) were injected subcutaneously in the flank of NCR nu/nu female mice with a 23g1 needle and 1 cc syringe, thereby giving each mouse  $1 \times 10^7$  cells. Tumors were allowed to grow for a period of up to 49 days post tumor cell inoculation. Serum was sampled for analysis on days 1, 7, 14, 35, 42 and 49 post tumor inoculation. Length and width measurements from each tumor were obtained three times per week using a Jamison microcaliper. Tumor volumes were calculated from tumor length/width measurements (tumor volume =  $0.5[a(b)^2]$  where a = longest axis of the tumor and b = shortest axis of the tumor). Serum was analyzed for the presence of HBV DNA by the Roche Amplicor HBV monitor TM DNA assay.

#### Experiment 1

HepG2.2.15 cells were carried and expanded in DMEM/10% FBS/2.4%HEPES/1%NEAA/1% Glutamine/1% Sodium Pyruvate media. Cells were resuspended in Delbecco's PBS with calcium/magnesium for injection. One hundred microliters of the tumor cell suspension (at a concentration of  $1 \times 10^8$  cells/mL) were injected subcutaneously in the flank of NCR nu/nu female mice with a 23g1 needle and 1 cc syringe, thereby giving each mouse  $1 \times 10^7$  cells. Tumors were allowed to grow for a period of up to 49 days post tumor cell inoculation. Serum was sampled for analysis on days 1, 7, 14, 35, 42 and 49 post tumor inoculation. Length and width measurements from each tumor were obtained three times per week using a Jamison microcaliper. Tumor volumes were calculated from tumor length/width measurements (tumor volume =  $0.5[a(b)^2]$  where a = longest axis of the tumor and b = shortest axis of the tumor). Serum was analyzed for the presence of HBV DNA by the Roche Amplicor HBV monitor TM DNA assay.

### Results

When athymic nu/nu female mice are subcutaneously injected with HepG2.2.15 cells and form tumors, HBV DNA is detected in serum (peak serum level was  $1.9 \times 10^5$  copies/mL). There is a positive correlation ( $r_s = 0.7$ ,  $p < 0.01$ ) between tumor weight (milligrams) and HB viral copies/mL serum. Figure 21 shows a plot of HepG2.2.15 tumors in nu/nu female mice as tumor volume vs time. Table XVI shows the concentration of HBV DNA in relation to tumor size in the HepG2.2.15 implanted nu/nu female mice used in the study.

### Experiment 2

HepG2.2.15 cells were carried and expanded in DMEM/10% FBS/2.4%HEPES/1%NEAA/1% Glutamine/1% Sodium Pyruvate media containing 400 µg/ml G418 antibiotic. G418-resistant cells were resuspended in Dulbecco's PBS with calcium/magnesium for injection. One hundred microliters of the tumor cell suspension (at a concentration of  $1 \times 10^8$  cells/mL) were injected subcutaneously in the flank of NCR nu/nu female mice with a 23g1 needle and 1 cc syringe, thereby giving each mouse  $1 \times 10^7$  cells. Tumors were allowed to grow for a period of up to 49 days post tumor cell inoculation. Serum was sampled for analysis on day 37 post tumor inoculation. Length and width measurements from each tumor were obtained three times per week using a Jamison microcaliper. Tumor volumes were calculated from tumor length/width measurements (tumor volume =  $0.5[a(b)^2]$  where a = longest axis of the tumor and b = shortest axis of the tumor). Serum was analyzed for the presence of HBV DNA by the Roche Amplicor HBV monitor TM DNA assay.

### Results

When athymic nu/nu female mice are subcutaneously injected with G418 antibiotic resistant HepG2.2.15 cells and form tumors, HBV DNA is detected in serum (peak serum level was  $4.0 \times 10^5$  copies/mL). There is a positive correlation ( $r_s = 0.7$ ,  $p < 0.01$ ) between tumor weight (milligrams) and HB viral copies/mL serum. **Figure 22** shows a plot of HepG2.2.15 tumors in nu/nu female mice as tumor volume vs time. **Table XVII** shows the concentration of HBV DNA in relation to tumor size in the G418 antibiotic resistant HepG2.2.15 implanted nu/nu female mice used in the study.

**Example 18: Identification of Potential Enzymatic nucleic acid molecules Cleavage Sites in HCV RNA**

The sequence of HCV RNA was screened for accessible sites using a computer folding algorithm. Regions of the mRNA that did not form secondary folding structures and contained potential enzymatic nucleic acid cleavage sites were identified. The sequences of these cleavage sites are shown in **Tables XVIII, XIX, XX and XXIII**.

**Example 19: Selection of Enzymatic nucleic acid molecules Cleavage Sites in HCV RNA**

Enzymatic nucleic acid target sites were chosen by analyzing sequences of Human HCV (Genbank accession Nos: D11168, D50483.1, L38318 and S82227) and prioritizing the sites on the basis of folding. Enzymatic nucleic acid molecules are designed that could bind each target and are individually analyzed by computer folding (Christoffersen *et al.*, 1994 *J. Mol. Struc. Theochem*, 311, 273; Jaeger *et al.*, 1989, *Proc. Natl. Acad. Sci. USA*, 86, 7706) to assess whether the enzymatic nucleic acid molecules sequences fold into the appropriate secondary structure. Those enzymatic nucleic acid molecules with unfavorable intramolecular interactions between the binding arms and the catalytic core can be eliminated from consideration. As noted below, varying binding arm lengths can be chosen to optimize activity. Generally, at least 4 bases on each arm are able to bind to, or otherwise interact with, the target RNA.

**Example 20: Chemical Synthesis and Purification of Enzymatic nucleic acids**

Enzymatic nucleic acid molecules can be designed to anneal to various sites in the RNA message. The binding arms of the enzymatic nucleic acid molecules are complementary to the target site sequences described above. The enzymatic nucleic acid molecules can be chemically synthesized using, for example, RNA syntheses such as those described above and those described in Usman *et al.*, (1987 *J. Am. Chem. Soc.*, 109, 7845), Scaringe *et al.*, (1990 *Nucleic Acids Res.*, 18, 5433) and Wincott *et al.*, *supra*. Such methods make use of common nucleic acid protecting and coupling groups, such as dimethoxytrityl at the 5'-end, and phosphoramidites at the 3'-end. The average stepwise coupling yields are

typically >98%. Enzymatic nucleic acid molecules can be modified to enhance stability by modification with nuclease resistant groups, for example, 2'-amino, 2'-C-allyl, 2'-fluoro, 2'-O-methyl, 2'-H (for a review see Usman and Cedergren, 1992 TIBS 17, 34).

Enzymatic nucleic acid molecules can also be synthesized from DNA templates using bacteriophage T7 RNA polymerase (Milligan and Uhlenbeck, 1989, Methods Enzymol. 180, 51). Enzymatic nucleic acid molecules can be purified by gel electrophoresis using known methods, or can be purified by high pressure liquid chromatography (HPLC; See Wincott et al., supra; the totality of which is hereby incorporated herein by reference), and are resuspended in water. The sequences of chemically synthesized enzymatic nucleic acid constructs are shown below in **Tables XX, XXI and XXIII**. The antisense nucleic acid molecules shown in **Table XXII** were chemically synthesized.

Inactive enzymatic nucleic acid molecules, for example inactive hammerhead enzymatic nucleic acids, can be synthesized by substituting the order of G5A6 and substituting a U for A14 (numbering from Hertel et al., 1992 Nucleic Acids Res., 20, 3252).

**Example 21: Enzymatic Nucleic Acid Cleavage of HCV RNA Target *in vitro***

Enzymatic nucleic acid molecules targeted to the HCV are designed and synthesized as described above. These enzymatic nucleic acid molecules can be tested for cleavage activity *in vitro*, for example using the following procedure. The target sequences and the nucleotide location within the HCV are given in **Tables XVIII, XIX, XX and XXIII**.

**Cleavage Reactions:** Full-length or partially full-length, internally-labeled target RNA for enzymatic nucleic acid molecule cleavage assay is prepared by *in vitro* transcription in the presence of [ $\alpha$ - $^{32}$ P] CTP, passed over a G 50 Sephadex column by spin chromatography and used as substrate RNA without further purification. Alternately, substrates are 5'- $^{32}$ P-end labeled using T4 polynucleotide kinase enzyme. Assays are performed by pre-warming a 2X concentration of purified enzymatic nucleic acid molecule in enzymatic nucleic acid molecule cleavage buffer (50 mM Tris-HCl, pH 7.5 at 37°C, 10 mM MgCl<sub>2</sub>) and the cleavage reaction was initiated by adding the 2X enzymatic nucleic acid molecule mix to an equal volume of substrate RNA (maximum of 1-5 nM) that was also pre-warmed in cleavage buffer. As an initial screen, assays are carried out for 1 hour at 37°C using a final concentration of either 40 nM or 1 mM enzymatic nucleic acid molecule, *i.e.*, enzymatic nucleic acid molecule excess. The reaction is quenched by the addition of an equal volume of 95% formamide, 20 mM EDTA, 0.05% bromophenol blue and 0.05% xylene cyanol after which the sample is heated to 95°C for 2 minutes, quick chilled and loaded onto a denaturing polyacrylamide gel. Substrate RNA and the specific RNA cleavage products generated by enzymatic nucleic acid molecule cleavage are visualized on an autoradiograph of the gel. The

percentage of cleavage is determined by Phosphor Imager<sup>®</sup> quantitation of bands representing the intact substrate and the cleavage products.

Alternatively, enzymatic nucleic acid molecules and substrates were synthesized in 96-well format using 0.2 $\mu$ mol scale. Substrates were 5'-<sup>32</sup>P labeled and gel purified using 7.5% polyacrylamide gels, and eluting into water. Assays were done by combining trace substrate with 500nM enzymatic nucleic acid or greater, and initiated by adding final concentrations of 40mM Mg<sup>+2</sup>, and 50mM Tris-Cl pH 8.0. For each enzymatic nucleic acid/substrate combination a control reaction was done to ensure cleavage was not the result of non-specific substrate degradation. A single three hour time point was taken and run on a 15% polyacrylamide gel to assess cleavage activity. Gels were dried and scanned using a Molecular Dynamics Phosphorimager and quantified using Molecular Dynamics ImageQuant software. Percent cleaved was determined by dividing values for cleaved substrate bands by full-length (uncleaved) values plus cleaved values and multiplying by 100 (%cleaved=[C/(U+C)]\*100). In vitro cleavage data of enzymatic nucleic acid molecules targeting plus and minus strand HCV RNA is shown in Table XXIII.

#### Example 22: Inhibition of Luciferase Activity Using HCV Targeting Enzymatic nucleic acids in OST7 Cells

The capability of enzymatic nucleic acids to inhibit HCV RNA intracellularly was tested using a dual reporter system that utilizes both firefly and Renilla luciferase (Figure 23). The enzymatic nucleic acids targeted to the 5' HCV UTR region, which when cleaved, would prevent the translation of the transcript into luciferase.

#### Synthesis of Stabilized Enzymatic nucleic acids

Enzymatic nucleic acids were designed to target 15 sites within the 5'UTR of the HCV RNA (Figure 24) and synthesized as previously described, except that all enzymatic nucleic acids contain two 2'-amino uridines. Enzymatic nucleic acid and paired control sequences for targeted sites used in various examples herein are shown in Table XXI.

#### Reporter plasmids

The T7/HCV/firefly luciferase plasmid (HCVT7C<sub>1-341</sub>, genotype 1a) was graciously provided by Aleem Siddiqui (University of Colorado Health Sciences Center, Denver, CO). The T7/HCV/firefly luciferase plasmid contains a T7 bacteriophage promoter upstream of the HCV 5'UTR (nucleotides 1-341)/firefly luciferase fusion DNA. The Renilla luciferase control plasmid (pRLSV40) was purchased from PROMEGA.

#### Luciferase assay

Dual luciferase assays were carried out according to the manufacturer's instructions (PROMEGA) at 4 hours after co-transfection of reporter plasmids and enzymatic nucleic acids. All data is shown as the average ratio of HCV/firefly luciferase luminescence over Renilla luciferase luminescence as determined by triplicate samples  $\pm$  SD.

#### Cell culture and transfections

OST7 cells were maintained in Dulbecco's modified Eagle's medium (GIBCO BRL) supplemented with 10% fetal calf serum, L-glutamine (2 mM) and penicillin/streptomycin. For transfections, OST7 cells were seeded in black-walled 96-well plates (Packard) at a density of 12,500 cells/well and incubated at 37°C under 5% CO<sub>2</sub> for 24 hours. Co-transfection of target reporter HCV7C (0.8 µg/mL), control reporter pRLSV40, (1.2 µg/mL) and enzymatic nucleic acid, (50 - 200 nM) was achieved by the following method: a 5X mixture of HCV7C (4 µg/mL), pRLSV40 (6 µg/mL) enzymatic nucleic acid (250 - 1000 nM) and cationic lipid (28.5 µg/mL) was made in 150 µL of OPTI-MEM (GIBCO BRL) minus serum. Reporter/enzymatic nucleic acid/lipid complexes were allowed to form for 20 min at 37°C under 5% CO<sub>2</sub>. Medium was aspirated from OST7 cells and replaced with 120 µL of OPTI-MEM (GIBCO BRL) minus serum, immediately followed by the addition of 30 µL of 5X reporter/enzymatic nucleic acid/lipid complexes. Cells were incubated with complexes for 4 hours at 37°C under 5% CO<sub>2</sub>.

#### IC<sub>50</sub> determinations for dose response curves

Apparent IC<sub>50</sub> values were calculated by linear interpolation. The apparent IC<sub>50</sub> is 1/2 the maximal response between the two consecutive points in which approximately 50% inhibition of HCV/luciferase expression is observed on the dose curve.

#### Quantitation of RNA Samples

Total RNA from transfected cells was purified using the Qiagen RNeasy 96 procedure including a DNase I treatment according to the manufacturer's instructions. Real time RT-PCR (Taqman assay) was performed on purified RNA samples using separate primer/probe sets specific for either firefly or Renilla luciferase RNA. Firefly luciferase primers and probe were upper (5'-CGGTTCGGTAAAGTTGTTCCATT-3') (SEQ ID NO. 16202), lower (5'-CCTCTGACACATAATTCGCCTCT-3') (SEQ ID NO. 16203), and probe (5'-FAM-TGAAGCGAAGGTTGTGGATCTGGATACC-TAMRA-3') (SEQ ID NO 16204), and Renilla luciferase primers and probe were upper (5'-GTTTATTGAATCGGACCCAGGAT-3') (SEQ ID NO. 16205), lower (5'-AGGTGCATCTTCTTGCGAAAA-3') (SEQ ID NO. 16206), and probe (5'-FAM-CTTTTCCAATGCTATTGTTGAAGGTGCCAA-3') (SEQ ID NO. 16207) -TAMRA, both sets of primers and probes were purchased from Integrated DNA

Technologies. RNA levels were determined from a standard curve of amplified RNA purified from a large-scale transfection. RT minus controls established that RNA signals were generated from RNA and not residual plasmid DNA. RT-PCR conditions were: 30 min at 48°C, 10 min at 95°C, followed by 40 cycles of 15 sec at 95°C and 1 min at 60°C. Reactions were performed on an ABI Prism 7700 sequence detector. Levels of firefly luciferase RNA were normalized to the level of Renilla luciferase RNA present in the same sample. Results are shown as the average of triplicate treatments  $\pm$  SD.

Example 23: Inhibition of HCV 5'UTR-luciferase expression by synthetic stabilized enzymatic nucleic acids

The primary sequence of the HCV 5'UTR and characteristic secondary structure (Figure 24) is highly conserved across all HCV genotypes, thus making it a very attractive target for enzymatic nucleic acid-mediated cleavage. Enzymatic hammerhead nucleic acids, as a generally shown in Figure 25 and Table XXI (RPI 12249-12254, 12257-12265) were designed and synthesized to target 15 of the most highly conserved sites in the 5'UTR of HCV RNA. These synthetic enzymatic nucleic acids were stabilized against nuclease degradation by the addition of modifications such as 2'-O-methyl nucleotides, 2'-amino-uridines at U4 and U7 core positions, phosphorothioate linkages, and a 3'-inverted abasic cap.

In order to mimic cytoplasmic transcription of the HCV genome, OST7 cells were transfected with a target reporter plasmid containing a T7 bacteriophage promoter upstream of a HCV 5'UTR/firefly luciferase fusion gene. Cytoplasmic expression of the target reporter is facilitated by high levels of T7 polymerase expressed in the cytoplasm of OST7 cells. Co-transfection of target reporter HCVT7C<sub>1-341</sub> (firefly luciferase), control reporter pRLSV40 (Renilla luciferase) and enzymatic nucleic acid was carried out in the presence of cationic lipid. To determine the background level of luciferase activity, applicant used a control enzymatic nucleic acid that targets an irrelevant, non-HCV sequence. Transfection of reporter plasmids in the presence of this irrelevant control enzymatic nucleic acid (ICR) resulted in a slight decrease of reporter expression when compared to transfection of reporter plasmids alone. Therefore, the ICR was used to control for non-specific effects on reporter expression during treatment with HCV specific enzymatic nucleic acids. Renilla luciferase expression from the pRLSV40 reporter was used to normalize for transfection efficiency and sample recovery.

Of the 15 amino-modified hammerhead enzymatic nucleic acids tested, 12 significantly inhibited HCV/luciferase expression ( $> 45\%$ ,  $P < 0.05$ ) as compared to the ICR (Figure 26A). These data suggest that most of the HCV 5'UTR sites targeted here are accessible to enzymatic nucleic acid binding and subsequent RNA cleavage. To investigate further the

enzymatic nucleic acid-dependent inhibition of HCV/luciferase activity, hammerhead enzymatic nucleic acids designed to cleave after sites 79, 81, 142, 192, 195, 282 or 330 of the HCV 5'UTR were selected for continued study because their anti-HCV activity was the most efficacious over several experiments. A corresponding attenuated core (AC) control was synthesized for each of the 7 active enzymatic nucleic acids (Table XX). Each paired AC control contains similar nucleotide composition to that of its corresponding active enzymatic nucleic acid however, due to scrambled binding arms and changes to the catalytic core, lacks the ability to bind or catalyze the cleavage of HCV RNA. Treatment of OST7 cells with enzymatic nucleic acids designed to cleave after sites 79, 81, 142, 195 or 330 resulted in significant inhibition of HCV/luciferase expression (65%, 50%, 50%, 80% and 80%, respectively) when compared to HCV/luciferase expression in cells treated with corresponding ACs,  $P < 0.05$  (Figure 26B). It should be noted that treatment with either the ICR or ACs for sites 79, 81, 142 or 192 caused a greater reduction of HCV/luciferase expression than treatment with ACs for sites 195, 282 or 330. The observed differences in HCV/luciferase expression after treatment with ACs most likely represents the range of activity due to non-specific effects of oligonucleotide treatment and/or differences in base composition. Regardless of differences in HCV/luciferase expression levels observed as a result of treatment with ACs, active enzymatic nucleic acids designed to cleave after sites 79, 81, 142, 195, or 330 demonstrated similar and potent anti-HCV activity (Figure 26B).

Example 24: Synthetic stabilized enzymatic nucleic acids inhibit HCV/luciferase expression in a concentration-dependent manner

In order to characterize enzymatic nucleic acid efficacy in greater detail, these same 5 lead hammerhead enzymatic nucleic acids were tested for their ability to inhibit HCV/luciferase expression over a range of enzymatic nucleic acid concentrations (0 nM - 100 nM). For constant transfection conditions, the total concentration of nucleic acid was maintained at 100 nM for all samples by mixing the active enzymatic nucleic acid with its corresponding AC. Moreover, mixing of active enzymatic nucleic acid and AC maintains the lipid to nucleic acid charge ratio. A concentration-dependent inhibition of HCV/luciferase expression was observed after treatment with each of the 5 enzymatic nucleic acids (Figures 27A-E). By linear interpolation, the enzymatic nucleic acid concentration resulting in 50% inhibition (apparent  $IC_{50}$ ) of HCV/luciferase expression ranged from 40 - 215 nM. The two most efficacious enzymatic nucleic acids were those designed to cleave after sites 195 or 330 with apparent  $IC_{50}$  values of 46 nM and 40 nM, respectively (Figures 27D and E).

Example 25: An enzymatic nucleic acid mechanism is required for the observed inhibition of HCV/luciferase expression



To confirm that an enzymatic nucleic acid mechanism of action was responsible for the observed inhibition of HCV/luciferase expression, paired binding-arm attenuated core (BAC) controls (RPI 15291 and 15294) were synthesized for direct comparison to enzymatic nucleic acids targeting sites 195 (RPI 12252) and 330 (RPI 12254). Paired BACs can specifically bind HCV RNA but are unable to promote RNA cleavage because of changes in the catalytic core and, thus, can be used to assess inhibition due to binding alone. Also included in this comparison were paired SAC controls (RPI 15292 and 15295) that contain scrambled binding arms and attenuated catalytic cores, and so lack the ability to bind the target RNA or to catalyze target RNA cleavage.

Enzymatic nucleic acid cleavage of target RNA should result in both a lower level of HCV/luciferase RNA and a subsequent decrease in HCV/luciferase expression. In order to analyze target RNA levels, a reverse transcriptase/polymerase chain reaction (RT-PCR) assay was employed to quantify HCV/luciferase RNA levels. Primers were designed to amplify the luciferase coding region of the HCV 5'UTR/luciferase RNA. This region was chosen because HCV-targeted enzymatic nucleic acids that might co-purify with cellular RNA would not interfere with RT-PCR amplification of the luciferase RNA region. Primers were also designed to amplify the Renilla luciferase RNA so that Renilla RNA levels could be used to control for transfection efficiency and sample recovery.

OST7 cells were treated with active enzymatic nucleic acids designed to cleave after sites 195 or 330, paired SACs, or paired BACs. Treatment with enzymatic nucleic acids targeting site 195 or 330 resulted in a significant reduction of HCV/luciferase RNA when compared to their paired SAC controls ( $P < 0.01$ ). In this experiment the site 195 enzymatic nucleic acid was more efficacious than the site 330 enzymatic nucleic acid (**Figure 28A**). Treatment with paired BACs that target site 195 or 330 did not reduce HCV/luciferase RNA when compared to the corresponding SACs, thus confirming that the ability to bind alone does not result in a reduction of HCV/luciferase RNA.

To confirm that enzymatic nucleic acid-mediated cleavage of target RNA is necessary for inhibition of HCV/luciferase expression, HCV/luciferase activity was determined in the same experiment. As expected, significant inhibition of HCV/luciferase expression was observed after treatment with active enzymatic nucleic acids when compared to paired SACs (**Figure 28B**). Importantly, treatment with paired BACs did not inhibit HCV/luciferase expression, thus confirming that the ability to bind alone is also not sufficient to inhibit translation. As observed in the RNA assay, the site 195 enzymatic nucleic acid was more efficacious than the site 330 enzymatic nucleic acid in this experiment. However, a correlation between enzymatic nucleic acid-mediated HCV RNA reduction and inhibition of HCV/luciferase translation was observed for enzymatic nucleic acids to both sites. The

reduction in target RNA and the necessity for an active enzymatic nucleic acid catalytic core confirm that a enzymatic nucleic acid mechanism is required for the observed reduction in HCV/luciferase protein activity in cells treated with site 195 or site 330 enzymatic nucleic acids.

Example 26: Zinzyme Inhibition of chimeric HCV/Poliovirus replication

During HCV infection, viral RNA is present as a potential target for enzymatic nucleic acid cleavage at several processes: un-coating, translation, RNA replication and packaging. Target RNA can be more or less accessible to enzymatic nucleic acid cleavage at any one of these steps. Although the association between the HCV initial ribosome entry site (IRES) and the translation apparatus is mimicked in the HCV 5'UTR/luciferase reporter system, these other viral processes are not represented in the OST7 system. The resulting RNA/protein complexes associated with the target viral RNA are also absent. Moreover, these processes can be coupled in an HCV-infected cell which could further impact target RNA accessibility. Therefore, applicant tested whether enzymatic nucleic acids designed to cleave the HCV 5'UTR could effect a replicating viral system.

Recently, Lu and Wimmer characterized a HCV-poliovirus chimera in which the poliovirus IRES was replaced by the IRES from HCV (Lu & Wimmer, 1996, Proc. Natl. Acad. Sci. USA. 93, 1412-1417). Poliovirus (PV) is a positive strand RNA virus like HCV, but unlike HCV is non-enveloped and replicates efficiently in cell culture. The HCV-PV chimera expresses a stable, small plaque phenotype relative to wild type PV.

The following enzymatic nucleic acid molecules (zinzymes) were synthesized and tested for replicative inhibition of an HCV/Poliovirus chimera: RPI 18763, RPI 18812, RPI 18749, RPI 18765, RPI 18792, and RPI 18814 (Table XX). A scrambled attenuated core enzymatic nucleic acid, RPI 18743, was used as a control.

HeLa cells were infected with the HCV-PV chimera for 30 minutes and immediately treated with enzymatic nucleic acid. HeLa cells were seeded in U-bottom 96-well plates at a density of 9000-10,000 cells/well and incubated at 37°C under 5% CO<sub>2</sub> for 24 h. Transfection of nucleic acid (200 nM) was achieved by mixing of 10X nucleic acid (2000 nM) and 10X of a cationic lipid (80 µg/ml) in DMEM (Gibco BRL) with 5% fetal bovine serum (FBS). Nucleic acid/lipid complexes were allowed to incubate for 15 minutes at 37°C under 5% CO<sub>2</sub>. Medium was aspirated from cells and replaced with 80 µl of DMEM (Gibco BRL) with 5% FBS serum, followed by the addition of 20 µl of 10X complexes. Cells were incubated with complexes for 24 hours at 37°C under 5% CO<sub>2</sub>.

The yield of HCV-PV from treated cells was quantified by plaque assay. The plaque assays were performed by diluting virus samples in serum-free DMEM (Gibco BRL) and applying 100 µl to HeLa cell monolayers (~80% confluent) in 6-well plates for 30 minutes. Infected monolayers were overlaid with 3 ml 1.2% agar (Sigma) and incubated at 37°C under 5% CO<sub>2</sub>. Two or three days later the overlay was removed, monolayers were stained with 1.2% crystal violet, and plaque forming units were counted. The results for the zinc finger inhibition of HCV-PV replication are shown in Figure 33.

Example 27: Antisense inhibition of chimeric HCV/Poliovirus replication

Antisense nucleic acid molecules (RPI 17501 and RPI 17498, Table XXII) were tested for replicative inhibition of an HCV/Poliovirus chimera compared to scrambled controls. An antisense nucleic acid molecule is a non-enzymatic nucleic acid molecule that binds to target RNA by means of RNA-RNA or RNA-DNA or RNA-PNA (protein nucleic acid; Egholm et al., 1993 Nature 365, 566) interactions and alters the activity of the target RNA (for a review, see Stein and Cheng, 1993 Science 261, 1004 and Woolf et al., US patent No. 5,849,902). Typically, antisense molecules are complementary to a target sequence along a single contiguous sequence of the antisense molecule. However, in certain embodiments, an antisense molecule can bind to substrate such that the substrate molecule forms a loop, and/or an antisense molecule can bind such that the antisense molecule forms a loop. Thus, the antisense molecule can be complementary to two (or even more) non-contiguous substrate sequences or two (or even more) non-contiguous sequence portions of an antisense molecule can be complementary to a target sequence or both. For a review of current antisense strategies, see Schmajuk et al., 1999, J. Biol. Chem., 274, 21783-21789, Delhas et al., 1997, Nature, 15, 751-753, Stein et al., 1997, Antisense N. A. Drug Dev., 7, 151, Crooke, 2000, Methods Enzymol., 313, 3-45; Crooke, 1998, Biotech. Genet. Eng. Rev., 15, 121-157, Crooke, 1997, Ad. Pharmacol., 40, 1-49. In addition, antisense DNA can be used to target RNA by means of DNA-RNA interactions, thereby activating RNase H, which digests the target RNA in the duplex. The antisense oligonucleotides can comprise one or more RNase H activating region, which is capable of activating RNase H cleavage of a target RNA. Antisense DNA can be synthesized chemically or expressed via the use of a single stranded DNA expression vector or equivalent thereof. Additionally, antisense molecules can be used in combination with the enzymatic nucleic acid molecules of the instant invention.

A RNase H activating region is a region (generally greater than or equal to 4-25 nucleotides in length, preferably from 5-11 nucleotides in length) of a nucleic acid molecule capable of binding to a target RNA to form a non-covalent complex that is recognized by cellular RNase H enzyme (see for example Arrow et al., US 5,849,902; Arrow et al., US 5,989,912). The RNase H enzyme binds to the nucleic acid molecule-target RNA complex

and cleaves the target RNA sequence. The RNase H activating region comprises, for example, phosphodiester, phosphorothioate (preferably at least four of the nucleotides are phosphorothioate substitutions; more specifically, 4-11 of the nucleotides are phosphorothioate substitutions); phosphorodithioate, 5'-thiophosphate, or methylphosphonate backbone chemistry or a combination thereof. In addition to one or more backbone chemistries described above, the RNase H activating region can also comprise a variety of sugar chemistries. For example, the RNase H activating region can comprise deoxyribose, arabino, fluoroarabino or a combination thereof, nucleotide sugar chemistry. Those skilled in the art will recognize that the foregoing are non-limiting examples and that any combination of phosphate, sugar and base chemistry of a nucleic acid that supports the activity of RNase H enzyme is within the scope of the definition of the RNase H activating region and the instant invention.

HeLa cells were infected with the HCV-PV chimera for 30 minutes and immediately treated with antisense nucleic acid. HeLa cells were seeded in U-bottom 96-well plates at a density of 9000-10,000 cells/well and incubated at 37°C under 5% CO<sub>2</sub> for 24 h. Transfection of nucleic acid (200 nM) was achieved by mixing of 10X nucleic acid (2000 nM) and 10X of a cationic lipid (80 µg/ml) in DMEM (Gibco BRL) with 5% fetal bovine serum (FBS). Nucleic acid/lipid complexes were allowed to incubate for 15 minutes at 37°C under 5% CO<sub>2</sub>. Medium was aspirated from cells and replaced with 80 µl of DMEM (Gibco BRL) with 5% FBS serum, followed by the addition of 20 µls of 10X complexes. Cells were incubated with complexes for 24 hours at 37°C under 5% CO<sub>2</sub>.

The yield of HCV-PV from treated cells was quantified by plaque assay. The plaque assays were performed by diluting virus samples in serum-free DMEM (Gibco BRL) and applying 100 µl to HeLa cell monolayers (~80% confluent) in 6-well plates for 30 minutes. Infected monolayers were overlaid with 3 ml 1.2% agar (Sigma) and incubated at 37°C under 5% CO<sub>2</sub>. Two or three days later the overlay was removed, monolayers were stained with 1.2% crystal violet, and plaque forming units were counted. The results for the antisense inhibition of HCV-PV are shown in **Figure 34**.

#### Example 28: Nucleic acid Inhibition of Chimeric HCV/PV in combination with Interferon

One of the limiting factors in interferon (IFN) therapy for chronic HCV are the toxic side effects associated with IFN. Applicant has reasoned that lowering the dose of IFN needed can reduce these side effects. Applicant has previously shown that enzymatic nucleic acid molecules targeting HCV RNA have a potent antiviral effect against replication of an HCV-poliovirus (PV) chimera (Macejak *et al.*, 2000, *Hepatology*, 31, 769-776). In order to determine if the antiviral effect of type 1 IFN could be improved by the addition of anti-HCV enzymatic nucleic acid treatment, a dose response (0 U/ml to 100 U/ml) with IFN alfa 2a or

IFN alfa 2b was performed in HeLa cells in combination with 200 nM site 195 anti-HCV enzymatic nucleic acid (RPI 13919) or enzymatic nucleic acid control (SAC) treatment. The SAC control (RPI 17894) is a scrambled binding arm, attenuated core version of the site 195 enzymatic nucleic acid (RPI 13919). IFN dose responses were performed with different pretreatment regimes to find the dynamic range of inhibition in this system. In these studies, HeLa cells were used instead of HepG2 because of more efficient enzymatic nucleic acid delivery (Macejak *et al.*, 2000, *Hepatology*, 31, 769-776).

#### Cells and Virus

HeLa cells were maintained in DMEM (BioWhittaker, Walkersville, MD) supplemented with 5% fetal bovine serum. A cloned DNA copy of the HCV-PV chimeric virus was a gift of Dr. Eckard Wimmer (NYU, Stony Brook, NY). An RNA version was generated by in vitro transcription and transfected into HeLa cells to produce infectious virus (Lu and Wimmer, 1996, PNAS USA., 93, 1412-1417).

#### Enzymatic nucleic acid Synthesis

Nuclease resistant enzymatic nucleic acids and control oligonucleotides containing 2'-O-methyl-nucleotides, 2'-deoxy-2'-C-allyl uridine, a 3'-inverted abasic cap, and phosphorothioate linkages were chemically synthesized. The anti-HCV enzymatic nucleic acid (RPI 13919) targeting cleavage after nucleotide 195 of the 5' UTR of HCV is shown in Table XX. Attenuated core controls have nucleotide changes in the core sequence that greatly diminished the enzymatic nucleic acid's cleavage activity. The attenuated controls either contain scrambled binding arms (referred to as SAC, RPI 18743) or maintain binding arms (BAC, RPI 17894) capable of binding to the HCV RNA target.

#### Enzymatic nucleic acid Delivery

A cationic lipid was used as a cytofectin agent. HeLa cells were seeded in 96-well plates at a density of 9000-10,000 cells/well and incubated at 37°C under 5% CO<sub>2</sub> for 24 h. Transfection of enzymatic nucleic acid or control oligonucleotides (200 nM) was achieved by mixing 10X enzymatic nucleic acid or control oligonucleotides (2000 nM) with 10X RPI.9778 (80 µg/ml) in DMEM containing 5% fetal bovine serum (FBS) in U-bottom 96-well plates to make 5X complexes. Enzymatic nucleic acid/lipid complexes were allowed to incubate for 15 min at 37°C under 5% CO<sub>2</sub>. Medium was aspirated from cells and replaced with 80 µl of DMEM (Gibco BRL) containing 5% FBS serum, followed by the addition of 20 µl of 5X complexes. Cells were incubated with complexes for 24 h at 37°C under 5% CO<sub>2</sub>.

#### Interferon/Enzymatic nucleic acid Combination Treatment

Interferon alfa 2a (Roferon®) was purchased from Roche Bioscience (Palo Alto, CA). Interferon alfa 2b (Intron A®) was purchased from Schering-Plough Corporation (Madison, NJ). Consensus interferon (interferon-alfa-con 1) was a generous gift of Amgen, Inc. (Thousand Oaks, CA). For the basis of comparison, the manufacturers' specified units were used in the studies reported here; however, the manufacturers' unit definitions of these three IFN preparations are not necessarily the same. Nevertheless, since clinical dosing is based on the manufacturers' specified units, a direct comparison based on these units has relevance to clinical therapeutic indices. HeLa cells were seeded (10,000 cells per well) and incubated at 37°C under 5% CO<sub>2</sub> for 24 h. Cells were then pre-treated with interferon in complete media (DMEM + 5% FBS) for 4 h and then infected with HCV-PV at a multiplicity of infection (MOI) = 0.1 for 30 min. The viral inoculum was then removed and enzymatic nucleic acid or attenuated control (SAC or BAC) was delivered with the cytofectin formulation (8 µg/ml) in complete media for 24 h as described above. Where indicated for enzymatic nucleic acid dose response studies, active enzymatic nucleic acid was mixed with SAC to maintain a 200 nM total oligonucleotide concentration and the same lipid charge ratio. After 24 h, cells were lysed to release virus by three cycles of freeze/thaw. Virus was quantified by plaque assay and viral yield is reported as mean plaque forming units per ml (pfu/ml) + SD. All experiments were repeated at least twice and the trends in the results reported were reproducible. Significance levels (P values) were determined by the Student's test.

#### Plaque Assay

Virus samples were diluted in serum-free DMEM and 100 µl applied to Vero cell monolayers (~80% confluent) in 6-well plates for 30 min. Infected monolayers were overlaid with 3 ml 1.2% agar (Sigma Chemical Company, St. Louis, MO) and incubated at 37°C under 5% CO<sub>2</sub>. When plaques were visible (after two to three days) the overlay was removed, monolayers were stained with 1.2% crystal violet, and plaque forming units were counted.

#### Results

As shown in **Figure 29A** and **29B**, treatment with the site 195 (RPI 13919) anti-HCV hammerhead enzymatic nucleic acid alone (0 U/ml IFN) resulted in viral replication that was dramatically reduced compared to SAC-treated cells (85%,  $P < 0.01$ ). For both IFN alfa 2a (**Figure 29A**) or IFN alfa 2b (**Figure 29B**), treatment with 25 U/ml resulted in a ~90% inhibition of HCV-PV replication in SAC-treated cells as compared to cells treated with SAC alone ( $p < 0.01$  for both observations). The maximal level of inhibition in SAC-treated cells (94%) was achieved by treatment with  $\geq 50$  U/ml of either IFN alfa 2a or IFN alfa 2b ( $p < 0.01$  for both observations *versus* SAC alone). Maximal inhibition could however, be achieved by a 5-fold lower dose of IFN alfa 2a (10 U/ml) if enzymatic nucleic acid targeting site 195 in the 5' UTR of HCV RNA was given in combination (**Figure 29A**,  $p < 0.01$ ). While the

additional effect of enzymatic nucleic acid treatment on IFN alfa 2b-treated cells at 10 U/ml was very slight, the combined effect with 25 U/ml IFN alfa 2b was greater in magnitude (Figure 29B). For both interferons tested, pretreatment with 25 U/ml in combination with 200 nM site 195 anti-HCV enzymatic nucleic acid resulted in an even greater level of inhibition of viral replication (>98%) compared to replication in cells treated with 200 nM SAC alone ( $P<0.01$ ).

A dose response of the site 195 anti-HCV enzymatic nucleic acid was also performed in HeLa cells, either with or without 12.5 U/ml IFN alfa 2a or IFN alfa 2b pretreatment. As shown in Figure 30, enzymatic nucleic acid-mediated inhibition was dose-dependent and a significant inhibition of HCV-PV replication (>75% *versus* 0 nM enzymatic nucleic acid,  $P<0.01$ ) could be achieved by treatment with  $\geq 150$  nM anti-HCV enzymatic nucleic acid alone (no IFN). However, in IFN-pretreated cells, the dose of anti-HCV enzymatic nucleic acid needed to achieve this level of inhibition was decreased 3-fold to 50 nM ( $P<0.01$  *versus* 0 nM enzymatic nucleic acid). In comparison, treatment with the site 195 anti-HCV enzymatic nucleic acid alone at 50 nM resulted in only ~40% inhibition of virus replication. Pretreatment with IFN enhanced the antiviral effect of site 195 enzymatic nucleic acid at all enzymatic nucleic acid doses, compared to no IFN pretreatment.

Interferon-alfacon1, consensus IFN (CIFN), is another type 1 IFN that is used to treat chronic HCV. To determine if a similar enhancement can occur in CIFN-treated cells, a dose response with CIFN was performed in HeLa cells using 0 U/ml to 12.5 U/ml CIFN in combination with 200 nM site 195 anti-HCV enzymatic nucleic acid or SAC treatment (Figure 31A). Again, in the presence of the site 195 anti-HCV enzymatic nucleic acid alone, viral replication was dramatically reduced compared to SAC-treated cells. As shown in Figure 31A, treatment with 200 nM anti-HCV enzymatic nucleic acid alone significantly inhibited HCV-PV replication (90% *versus* SAC treatment,  $P<0.01$ ). However, pretreatment with concentrations of CIFN from 1 U/ml to 12.5 U/ml in combination with 200 nM anti-HCV enzymatic nucleic acid resulted in even greater inhibition of viral replication (>98%) compared to replication in cells treated with 200 nM SAC alone ( $P<0.01$ ). It is important to note that pretreatment with 1 U/ml CIFN in SAC-treated cells did not have a significant effect on HCV-poliovirus replication, but in the presence of enzymatic nucleic acid a significant inhibition of replication was observed (>98%,  $P<0.01$ ). Thus, the dose of CIFN needed to achieve a >98% inhibition could be lowered to 1 U/ml in cells also treated with 200 nM site 195 anti-HCV enzymatic nucleic acid.

A dose response of site 195 anti-HCV enzymatic nucleic acid was then performed in HeLa cells, either with or without 12.5 U/ml CIFN pretreatment. As shown in Figure 31B, a significant inhibition of HCV-PV replication (>95% *versus* 0 nM enzymatic nucleic acid,

$P < 0.01$ ) could be achieved by treatment with  $\geq 150$  nM anti-HCV enzymatic nucleic acid alone. However, in CIFN-pretreated cells, the dose of anti-HCV enzymatic nucleic acid needed to achieve this level of inhibition was only 50 nM ( $P < 0.01$ ). In comparison, treatment with the site 195 anti-HCV enzymatic nucleic acid alone at 50 nM resulted in ~50% inhibition of virus replication. Thus, as was seen with IFN alfa 2a and IFN alfa 2b, the dose of enzymatic nucleic acid could be reduced 3-fold in the presence of CIFN pretreatment to achieve a similar antiviral effect as enzymatic nucleic acid-treatment alone.

To further explore the combination of lower enzymatic nucleic acid concentration and CIFN, a dose response with 0 U/ml to 12.5 U/ml CIFN was subsequently performed in HeLa cells in combination with 50 nM site 195 anti-HCV enzymatic nucleic acid treatment. In multiple experiments, treatment with 50 nM anti-HCV enzymatic nucleic acid alone inhibited HCV-PV replication 50% – 81% compared to viral replication in SAC-treated cells. As for the experiment shown in Figure 31A, treatment with CIFN alone at 5 U/ml resulted in ~50% inhibition of viral replication. However, a four hour pretreatment with 5 U/ml CIFN followed by 50 nM anti-HCV enzymatic nucleic acid treatment resulted in 95% - 97% inhibition compared to SAC-treated cells ( $P < 0.01$ ).

To demonstrate that the enhanced antiviral effect of CIFN and enzymatic nucleic acid combination treatment was dependent upon enzymatic nucleic acid cleavage activity, the effect of CIFN in combination with site 195 anti-HCV enzymatic nucleic acid versus the effect of CIFN in combination with a binding competent, attenuated core, control (BAC) was then compared. The BAC can still bind to its specific RNA target, but is greatly diminished in cleavage activity. Pretreatment with 12.5 U/ml CIFN reduced the viral yield ~90% (7-fold) in cells treated with BAC (compare CIFN versus BAC in Figure 32). Cells treated with 200 nM site 195 anti-HCV enzymatic nucleic acid alone produced ~95% (17-fold) less virus than BAC-treated cells (195 RZ BAC in Figure 32). The combination of CIFN pretreatment and 200 nM site 195 anti-HCV enzymatic nucleic acid results in an augmented >98% (300-fold) reduction in viral yield (CIFN+RZ versus control in Figure 32).

### 2'-5'-Oligoadenylate Inhibition of HCV

Type 1 Interferon is a key constituent of many effective treatment programs for chronic HCV infection. Treatment with type 1 interferon induces a number of genes and results in an antiviral state within the cell. One of the genes induced is 2', 5' oligoadenylate synthetase, an enzyme that synthesizes short 2', 5' oligoadenylate (2-5A) molecules. Nascent 2-5A subsequently activates a latent RNase, RNase L, which in turn nonspecifically degrades viral RNA. As described herein, ribozymes targeting HCV RNA that inhibit the replication of an HCV-poliovirus (HCV-PV) chimera in cell culture and have shown that this antiviral effect is



augmented if ribozyme is given in combination with type 1 interferon. In addition, the 2-5A component of the interferon response can also inhibit replication of the HCV-PV chimera.

The antiviral effect of anti-HCV ribozyme treatment is enhanced if type 1 interferon is given in combination. Interferon induces a number of gene products including 2',5' oligoadenylate (2-5A) synthetase, double-stranded RNA-activated protein kinase (PKR), and the Mx proteins. Mx proteins appear to interfere with nuclear transport of viral complexes and are not thought to play an inhibitory role in HCV infection. On the other hand, the additional 2-5A-mediated RNA degradation (via RNase L) and/or the inhibition of viral translation by PKR in interferon-treated cells can augment the ribozyme-mediated inhibition of HCV-PV replication.

To investigate the potential role of the 2-5A/RNase L pathway in this enhancement phenomenon, HCV-PV replication was analyzed in HeLa cells treated exogenously with chemically-synthesized analogs of 2-5A (**Figure 35**), alone and in combination with the anti-HCV ribozyme (RPI 13919). These results were compared to replication in cells treated with interferon and/or anti-HCV ribozyme. Anti-HCV ribozyme was transfected into cells with a cationic lipid. To control for nonspecific effects due to lipid-mediated transfection, a scrambled arm, attenuated core, oligonucleotide (SAC) (RPI 17894) was transfected for comparison. The SAC is the same base composition as the ribozyme but is greatly attenuated in catalytic activity due to changes in the core sequence and cannot bind specifically to the HCV sequence.

As shown in **Figure 36A**, HeLa cells pretreated with 10 U/ml consensus interferon for 4 hours prior to HCV-PV infection resulted in ~70% reduction of viral replication in SAC-treated cells. Similarly, HeLa cells treated with 100 nM anti-HCV ribozyme for 20 hours after infection resulted in an ~80% reduction in viral yield. This antiviral effect was enhanced to ~98% inhibition in HeLa cells pretreated with interferon for 4 hours before infection and then treated with anti-HCV ribozyme for 20 hours after infection. In parallel, a 2-5A compound (analog I, **Figure 35**) that was protected from nuclease digestion at the 3'-end with an inverted abasic moiety was tested. As shown in **Figure 36B**, treatment with 200 nM 2-5A analog I for 4 hours prior to HCV-PV infection only slightly inhibited HCV-PV replication (~20%) in SAC-treated cells. Moreover, the inhibition due to a 20 hour anti-HCV ribozyme treatment was not augmented with a 4 hour pretreatment of 2-5A in combination (compare third bar to fourth bar in **Figure 36B**).

There are several possible explanations why the chemically synthesized 2-5A analog was not able to completely activate RNase L. It is possible that the 2-5A analog was not sufficiently stable or that in this experiment the 4 hour pretreatment period was too short for RNase L activation. To test these possibilities, a 2-5A compound containing a 5'-terminal

thiophosphate (P=S) for added nuclease resistance, in addition to the 3'- abasic, was also included (analog II, **Figure 35**). In addition, a longer 2-5A treatment was used. In this experiment (**Figure 37**), HeLa cells were treated with 2-5A or 2-5A(P=S) for 20 hours after HCV-PV infection. Again, anti-HCV ribozyme treatment resulted in >80% inhibition. In contrast to the 20% inhibition of viral replication seen with a 4 hour 2-5A pretreatment, viral replication in cells treated with 2-5A analog I for 20 hours after HCV-PV infection was inhibited by ~70%. The P=S version (analog II) inhibited HCV-PV replication by ~35%. Thus, both 2-5A analogs used here are able to generate an antiviral effect, presumably through RNase L activation. The P=S version, although more resistant to 5' dephosphorylation, did not yield as great an anti-viral effect. It is possible that combination of the 5'-terminal thiophosphate together with the presence of a 3'-inverted abasic moiety can interfere with RNase L activation. Nevertheless, these results demonstrate potent anti-HCV activity by a nuclease-stabilized 2-5A analog.

The level of reduction in HCV-PV replication in cells treated with 2-5A analog I for 20 hours was similar to that in cells pretreated with consensus interferon for 4 hours. To determine if this expanded 2-5A treatment regimen would enhance anti-HCV ribozyme efficacy to the same degree as does the interferon pretreatment, HeLa cells infected with HCV-PV were treated with a combination of 2-5A and anti-HCV ribozyme for 20 hours after infection. In this experiment, a 200 nM treatment with anti-HCV ribozyme or 2-5A treatment alone inhibited viral replication by 88% or ~60%, respectively, compared to SAC treatment (**Figure 38**, left three bars). To maintain consistent transfection conditions but vary the concentration of anti-HCV ribozyme or 2-5A, anti-HCV ribozyme was mixed with the SAC to maintain a total dose of 200 nM. A 50 nM treatment with anti-HCV ribozyme inhibited HCV-PV replication by ~70% (solid middle bar). However, the amount of HCV-PV replication was not further reduced in cells treated with a combination of 50 nM anti-HCV ribozyme and 150 nM 2-5A (striped middle bar). Likewise, cells treated with 100 nM anti-HCV ribozyme inhibited HCV-PV replication by ~80% whether they were also treated with 100 nM of 2-5A or SAC (right two bars). In contrast, antiviral activity increased from 80% to 98% when 100 nM anti-HCV ribozyme was given in combination with interferon (**Figure 36A**). The reasons for the lack of additive or synergistic effects for the ribozyme/2-5A combination therapy is unclear at this time but can be due to that fact that both compounds have a similar mechanism of action (degradation of RNA). Further study is warranted to examine this possibility.

As a monotherapy, 2-5A treatment generates a similar inhibitory effect on HCV-poliovirus replication as does interferon treatment. If these results are maintained in HCV patients, treatment with 2-5A can not only be efficacious but can also generate less side

effects than those observed with interferon if the plethora of interferon-induced genes were not activated.

#### HBV Cell Culture Models

As previously mentioned, HBV does not infect cells in culture. However, transfection of HBV DNA (either as a head-to-tail dimer or as an "overlength" genome of >100%) into HuH7 or Hep G2 hepatocytes results in viral gene expression and production of HBV virions released into the media. Thus, HBV replication competent DNA are co-transfected with ribozymes in cell culture. Such an approach has been used to report intracellular ribozyme activity against HBV (zu Putlitz, *et al.*, 1999, *J. Virol.*, 73, 5381-5387, and Kim *et al.*, 1999, *Biochem. Biophys. Res. Commun.*, 257, 759-765). In addition, stable hepatocyte cell lines have been generated that express HBV. In these cells, only ribozyme need be delivered; however, performance of a delivery screen is required. Intracellular HBV gene expression can be assayed by a Taqman® assay for HBV RNA or by ELISA for HBV protein. Extracellular virus can be assayed by PCR for DNA or ELISA for protein. Antibodies are commercially available for HBV surface antigen and core protein. A secreted alkaline phosphatase expression plasmid can be used to normalize for differences in transfection efficiency and sample recovery.

#### HBV Animal Models

There are several small animal models to study HBV replication. One is the transplantation of HBV-infected liver tissue into irradiated mice. Viremia (as evidenced by measuring HBV DNA by PCR) is first detected 8 days after transplantation and peaks between 18 – 25 days (Ilan *et al.*, 1999, *Hepatology*, 29, 553-562).

Transgenic mice that express HBV have also been used as a model to evaluate potential anti-virals. HBV DNA is detectable in both liver and serum (Guidotti *et al.*, 1995, *J. Virology*, 69, 10, 6158-6169; Morrey *et al.*, 1999, *Antiviral Res.*, 42, 97-108).

An additional model is to establish subcutaneous tumors in nude mice with Hep G2 cells transfected with HBV. Tumors develop in about 2 weeks after inoculation and express HBV surface and core antigens. HBV DNA and surface antigen is also detected in the circulation of tumor-bearing mice (Yao *et al.*, 1996, *J. Viral Hepat.*, 3, 19-22).

In one embodiment, the invention features a mouse, for example a male or female mouse, implanted with HepG2.2.15 cells, wherein the mouse is susceptible to HBV infection and capable of sustaining HBV DNA expression. One embodiment of the invention provides a mouse implanted with HepG2.2.15 cells, wherein said mouse sustains the propagation of

HEPG2.2.15 cells and HBV production (see Macejak, US Provisional Patent Application No. 60/296,876).

Woodchuck hepatitis virus (WHV) is closely related to HBV in its virus structure, genetic organization, and mechanism of replication. As with HBV in humans, persistent WHV infection is common in natural woodchuck populations and is associated with chronic hepatitis and hepatocellular carcinoma (HCC). Experimental studies have established that WHV causes HCC in woodchucks and woodchucks chronically infected with WHV have been used as a model to test a number of anti-viral agents. For example, the nucleoside analogue 3T3 was observed to cause dose dependent reduction in virus (50% reduction after two daily treatments at the highest dose) (Hurwitz *et al.*, 1998. *Antimicrob. Agents Chemother.*, 42, 2804-2809).

#### HCV Cell Culture Models

Although there have been reports of replication of HCV in cell culture (see below), these systems are difficult to replicate and have proven unreliable. Therefore, as was the case for development of other anti-HCV therapeutics such as interferon and ribavirin, after demonstration of safety in animal studies applicant can proceed directly into a clinical feasibility study.

Several recent reports have documented *in vitro* growth of HCV in human cell lines (Mizutani *et al.*, *Biochem Biophys Res Commun* 1996 227(3):822-826; Tagawa *et al.*, *Journal of Gastroenterology and Hepatology* 1995 10(5):523-527; Cribier *et al.*, *Journal of General Virology* 76(10):2485-2491; Seipp *et al.*, *Journal of General Virology* 1997 78(10):2467-2478; Iacovacci *et al.*, *Research Virology* 1997 148(2):147-151; Iacovacci *et al.*, *Hepatology* 1997 26(5) 1328-1337; Ito *et al.*, *Journal of General Virology* 1996 77(5):1043-1054; Nakajima *et al.*, *Journal of Virology* 1996 70(5):3325-3329; Mizutani *et al.*, *Journal of Virology* 1996 70(10):7219-7223; Valli *et al.*, *Res Virol* 1995 146(4): 285-288; Kato *et al.*, *Biochem Biophys Res Comm* 1995 206(3):863-869). Replication of HCV has been demonstrated in both T and B cell lines as well as cell lines derived from human hepatocytes. Demonstration of replication was documented using either RT-PCR based assays or the b-DNA assay. It is important to note that the most recent publications regarding HCV cell cultures document replication for up to 6-months.

Additionally, another recent study has identified more robust strains of hepatitis C virus having adaptive mutations that allow the strains to replicate more vigorously in human cell culture. The mutations that confer this enhanced ability to replicate are located in a specific region of a protein identified as NS5A. Studies performed at Rockefeller University have shown that in certain cell culture systems, infection with the robust strains produces a 10,000-

fold increase in the number of infected cells. The greatly increased availability of HCV-infected cells in culture can be used to develop high-throughput screening assays, in which a large number of compounds, such as enzymatic nucleic acid molecules, can be tested to determine their effectiveness.

In addition to cell lines that can be infected with HCV, several groups have reported the successful transformation of cell lines with cDNA clones of full-length or partial HCV genomes (Harada *et al.*, Journal of General Virology 1995 76(5):1215-1221; Haramatsu *et al.*, Journal of Viral Hepatitis 1997 4S(1):61-67; Dash *et al.*, American Journal of Pathology 1997 151(2):363-373; Mizuno *et al.*, Gastroenterology 1995 109(6):1933-40; Yoo *et al.*, Journal Of Virology 1995 69(1):32-38).

#### HCV Animal Models

The best characterized animal system for HCV infection is the chimpanzee. Moreover, the chronic hepatitis that results from HCV infection in chimpanzees and humans is very similar. Although clinically relevant, the chimpanzee model suffers from several practical impediments that make use of this model difficult. These include; high cost, long incubation requirements and lack of sufficient quantities of animals. Due to these factors, a number of groups have attempted to develop rodent models of chronic hepatitis C infection. While direct infection has not been possible several groups have reported on the stable transfection of either portions or entire HCV genomes into rodents (Yamamoto *et al.*, Hepatology 1995 22(3): 847-855; Galun *et al.*, Journal of Infectious Disease 1995 172(1):25-30; Koike *et al.*, Journal of general Virology 1995 76(12):3031-3038; Pasquinelli *et al.*, Hepatology 1997 25(3): 719-727; Hayashi *et al.*, Princess Takamatsu Symp 1995 25:1430149; Mariya K, Yotsuyanagi H, Shintani Y, Fujie H, Ishibashi K, Matsuura Y, Miyamura T, Koike K. Hepatitis C virus core protein induces hepatic steatosis in transgenic mice. Journal of General Virology 1997 78(7) 1527-1531; Takehara *et al.*, Hepatology 1995 21(3):746-751; Kawamura *et al.*, Hepatology 1997 25(4): 1014-1021). In addition, transplantation of HCV infected human liver into immunocompromised mice results in prolonged detection of HCV RNA in the animal's blood.

Vierling, International PCT Publication No. WO 99/16307, describes a method for expressing hepatitis C virus in an *in vivo* animal model. Viable, HCV infected human hepatocytes are transplanted into a liver parenchyma of a scid/scid mouse host. The scid/scid mouse host is then maintained in a viable state, whereby viable, morphologically intact human hepatocytes persist in the donor tissue and hepatitis C virus is replicated in the persisting human hepatocytes. This model provides an effective means for the study of HCV inhibition by enzymatic nucleic acids *in vivo*.

### Indications

Particular degenerative and disease states that can be associated with HBV expression modulation include, but are not limited to, HBV infection, hepatitis, cancer, tumorigenesis, cirrhosis, liver failure and other conditions related to the level of HBV.

Particular degenerative and disease states that can be associated with HCV expression modulation include, but are not limited to, HCV infection, hepatitis, cancer, tumorigenesis, cirrhosis, liver failure and other conditions related to the level of HCV.

The present body of knowledge in HBV and HCV research indicates the need for methods to assay HBV or HCV activity and for compounds that can regulate HBV and HCV expression for research, diagnostic, and therapeutic use.

Lamivudine (3TC®), L-FMAU, adefovir dipivoxil, type 1 Interferon (e.g., interferon alpha, interferon beta, consensus interferon, polyethylene glycol interferon, polyethylene glycol interferon alpha 2a, polyethylene glycol interferon 2b, and polyethylene glycol consensus interferon), therapeutic vaccines, steroids, and 2'-5' Oligoadenylates are non-limiting examples of pharmaceutical agents that can be combined with or used in conjunction with the nucleic acid molecules (e.g. ribozymes and antisense molecules) of the instant invention. Those skilled in the art will recognize that other drugs or other therapies can similarly and readily be combined with the nucleic acid molecules of the instant invention (e.g. ribozymes and antisense molecules) and are, therefore, within the scope of the instant invention.

### Diagnostic uses

The nucleic acid molecules of this invention can be used as diagnostic tools to examine genetic drift and mutations within diseased cells or to detect the presence of HBV or HCV RNA in a cell. For example, the close relationship between enzymatic nucleic acid activity and the structure of the target RNA allows the detection of mutations in any region of the molecule which alters the base-pairing and three-dimensional structure of the target RNA. By using multiple enzymatic nucleic acids described in this invention, one can map nucleotide changes which are important to RNA structure and function *in vitro*, as well as in cells and tissues. Cleavage of target RNAs with enzymatic nucleic acids can be used to inhibit gene expression and define the role (essentially) of specified gene products in the progression of disease. In this manner, other genetic targets can be defined as important mediators of the disease. These experiments can lead to better treatment of the disease progression by affording the possibility of combinational therapies (e.g., multiple enzymatic nucleic acid molecules targeted to different genes, enzymatic nucleic acid molecules coupled

with known small molecule inhibitors, or intermittent treatment with combinations of enzymatic nucleic acid molecules and/or other chemical or biological molecules). Other *in vitro* uses of enzymatic nucleic acid molecules of this invention are well known in the art, and include detection of the presence of mRNAs associated with HBV or HCV-related condition. Such RNA is detected by determining the presence of a cleavage product after treatment with an enzymatic nucleic acid using standard methodology.

In a specific example, enzymatic nucleic acid molecules which can cleave only wild-type or mutant forms of the target RNA are used for the assay. The first enzymatic nucleic acid is used to identify wild-type RNA present in the sample and the second enzymatic nucleic acid is used to identify mutant RNA in the sample. As reaction controls, synthetic substrates of both wild-type and mutant RNA can be cleaved by both enzymatic nucleic acid molecules to demonstrate the relative ribozyme efficiencies in the reactions and the absence of cleavage of the "non-targeted" RNA species. The cleavage products from the synthetic substrates can also serve to generate size markers for the analysis of wild-type and mutant RNAs in the sample population. Thus each analysis involves two enzymatic nucleic acid molecules, two substrates and one unknown sample which is combined into six reactions. The presence of cleavage products is determined using an RNase protection assay so that full-length and cleavage fragments of each RNA can be analyzed in one lane of a polyacrylamide gel. It is not absolutely required to quantify the results to gain insight into the expression of mutant RNAs and putative risk of the desired phenotypic changes in target cells. The expression of mRNA whose protein product is implicated in the development of the phenotype (*i.e.*, HBV or HCV) is adequate to establish risk. If probes of comparable specific activity are used for both transcripts, then a qualitative comparison of RNA levels is adequate and will decrease the cost of the initial diagnosis. Higher mutant form to wild-type ratios are correlated with higher risk whether RNA levels are compared qualitatively or quantitatively.

#### Additional Uses

Potential usefulness of sequence-specific enzymatic nucleic acid molecules of the instant invention have many of the same applications for the study of RNA that DNA restriction endonucleases have for the study of DNA (Nathans *et al.*, 1975 *Ann. Rev. Biochem.* 44:273). For example, the pattern of restriction fragments can be used to establish sequence relationships between two related RNAs, and large RNAs can be specifically cleaved to fragments of a size more useful for study. The ability to engineer sequence specificity of the enzymatic nucleic acid molecule is ideal for cleavage of RNAs of unknown sequence. Applicant describes the use of nucleic acid molecules to down-regulate gene

expression of target genes in bacterial, microbial, fungal, viral, and eukaryotic systems including plant, or mammalian cells.

All patents and publications mentioned in the specification are indicative of the levels of skill of those skilled in the art to which the invention pertains. All references cited in this disclosure are incorporated by reference to the same extent as if each reference had been incorporated by reference in its entirety individually.

One skilled in the art would readily appreciate that the present invention is well adapted to carry out the objects and obtain the ends and advantages mentioned, as well as those inherent therein. The methods and compositions described herein as presently representative of preferred embodiments are exemplary and are not intended as limitations on the scope of the invention. Changes therein and other uses will occur to those skilled in the art, which are encompassed within the spirit of the invention, are defined by the scope of the claims.

It will be readily apparent to one skilled in the art that varying substitutions and modifications may be made to the invention disclosed herein without departing from the scope and spirit of the invention. Thus, such additional embodiments are within the scope of the present invention and the following claims.

The invention illustratively described herein suitably can be practiced in the absence of any element or elements, limitation or limitations that are not specifically disclosed herein. Thus, for example, in each instance herein any of the terms "comprising", "consisting essentially of" and "consisting of" may be replaced with either of the other two terms. The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention that in the use of such terms and expressions of excluding any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed. Thus, it should be understood that although the present invention has been specifically disclosed by preferred embodiments, optional features, modification and variation of the concepts herein disclosed may be resorted to by those skilled in the art, and that such modifications and variations are considered to be within the scope of this invention as defined by the description and the appended claims.

In addition, where features or aspects of the invention are described in terms of Markush groups or other grouping of alternatives, those skilled in the art will recognize that the invention is also thereby described in terms of any individual member or subgroup of members of the Markush group or other group.



TABLE I

## Characteristics of naturally occurring ribozymes

## Group I Introns

- Size: ~150 to >1000 nucleotides.
- Requires a U in the target sequence immediately 5' of the cleavage site.
- Binds 4-6 nucleotides at the 5'-side of the cleavage site.
- Reaction mechanism: attack by the 3'-OH of guanosine to generate cleavage products with 3'-OH and 5'-guanosine.
- Additional protein cofactors required in some cases to help folding and maintenance of the active structure.
- Over 300 known members of this class. Found as an intervening sequence in *Tetrahymena thermophila* rRNA, fungal mitochondria, chloroplasts, phage T4, blue-green algae, and others.
- Major structural features largely established through phylogenetic comparisons, mutagenesis, and biochemical studies [i,ii].
- Complete kinetic framework established for one ribozyme [iii,iv,v,vi].
- Studies of ribozyme folding and substrate docking underway [vii,viii,ix].
- Chemical modification investigation of important residues well established [x,xi].
- The small (4-6 nt) binding site may make this ribozyme too non-specific for targeted RNA cleavage, however, the *Tetrahymena* group I intron has been used to repair a "defective"  $\beta$ -galactosidase message by the ligation of new  $\beta$ -galactosidase sequences onto the defective message [xii].

## RNase P RNA (M1 RNA)

- Size: ~290 to 400 nucleotides.
- RNA portion of a ubiquitous ribonucleoprotein enzyme.

- Cleaves tRNA precursors to form mature tRNA [xiii].
- Reaction mechanism: possible attack by  $M^{2+}$ -OH to generate cleavage products with 3'-OH and 5'-phosphate.
- RNase P is found throughout the prokaryotes and eukaryotes. The RNA subunit has been sequenced from bacteria, yeast, rodents, and primates.
- Recruitment of endogenous RNase P for therapeutic applications is possible through hybridization of an External Guide Sequence (EGS) to the target RNA [xiv,xv]
- Important phosphate and 2' OH contacts recently identified [xvi,xvii]

### Group II Introns

- Size: >1000 nucleotides.
- Trans cleavage of target RNAs recently demonstrated [xviii,xix].
- Sequence requirements not fully determined.
- Reaction mechanism: 2'-OH of an internal adenosine generates cleavage products with 3'-OH and a "lariat" RNA containing a 3'-5' and a 2'-5' branch point.
- Only natural ribozyme with demonstrated participation in DNA cleavage [xx,xxi] in addition to RNA cleavage and ligation.
- Major structural features largely established through phylogenetic comparisons [xxii].
- Important 2' OH contacts beginning to be identified [xxiii]
- Kinetic framework under development [xxiv]

### Neurospora VS RNA

- Size: ~144 nucleotides.
- Trans cleavage of hairpin target RNAs recently demonstrated [xxv].

- Sequence requirements not fully determined.
- Reaction mechanism: attack by 2'-OH 5' to the scissile bond to generate cleavage products with 2',3'-cyclic phosphate and 5'-OH ends.
- Binding sites and structural requirements not fully determined.
- Only 1 known member of this class. Found in *Neurospora* VS RNA.

### Hammerhead Ribozyme

(see text for references)

- Size: ~13 to 40 nucleotides.
- Requires the target sequence UH immediately 5' of the cleavage site.
- Binds a variable number nucleotides on both sides of the cleavage site.
- Reaction mechanism: attack by 2'-OH 5' to the scissile bond to generate cleavage products with 2',3'-cyclic phosphate and 5'-OH ends.
- 14 known members of this class. Found in a number of plant pathogens (virusoids) that use RNA as the infectious agent.
- Essential structural features largely defined, including 2 crystal structures [xxvi,xxvii]
- Minimal ligation activity demonstrated (for engineering through *in vitro* selection) [xxviii]
- Complete kinetic framework established for two or more ribozymes [xxix].
- Chemical modification investigation of important residues well established [xxx].

### Hairpin Ribozyme

- Size: ~50 nucleotides.
- Requires the target sequence GUC immediately 3' of the cleavage site.

- Binds 4-6 nucleotides at the 5'-side of the cleavage site and a variable number to the 3'-side of the cleavage site.
- Reaction mechanism: attack by 2'-OH 5' to the scissile bond to generate cleavage products with 2',3'-cyclic phosphate and 5'-OH ends.
- 3 known members of this class. Found in three plant pathogen (satellite RNAs of the tobacco ringspot virus, arabis mosaic virus and chicory yellow mottle virus) which uses RNA as the infectious agent.
- Essential structural features largely defined [xxxi,xxxii,xxxiii,xxxiv]
- Ligation activity (in addition to cleavage activity) makes ribozyme amenable to engineering through *in vitro* selection [xxxv]
- Complete kinetic framework established for one ribozyme [xxxvi].
- Chemical modification investigation of important residues begun [xxxvii,xxxviii].

#### Hepatitis Delta Virus (HDV) Ribozyme

- Size: ~60 nucleotides.
- Trans cleavage of target RNAs demonstrated [xxxix].
- Binding sites and structural requirements not fully determined, although no sequences 5' of cleavage site are required. Folded ribozyme contains a pseudoknot structure [xl].
- Reaction mechanism: attack by 2'-OH 5' to the scissile bond to generate cleavage products with 2',3'-cyclic phosphate and 5'-OH ends.
- Only 2 known members of this class. Found in human HDV.
- <sup>xli</sup>Circular form of HDV is active and shows increased nuclease stability [xlii]

<sup>i</sup>. Michel, Francois; Westhof, Eric. Slippery substrates. *Nat. Struct. Biol.* (1994), 1(1), 5-7.

<sup>ii</sup>. Lisacek, Frederique; Diaz, Yolande; Michel, Francois. Automatic identification of group I intron cores in genomic DNA sequences. *J. Mol. Biol.* (1994), 235(4), 1206-17.

<sup>iii</sup>. Herschlag, Daniel; Cech, Thomas R.. Catalysis of RNA cleavage by the Tetrahymena thermophila ribozyme. 1. Kinetic description of the reaction of an RNA substrate complementary to the active site. *Biochemistry* (1990), 29(44), 10159-71.

- iv. Herschlag, Daniel; Cech, Thomas R.. Catalysis of RNA cleavage by the Tetrahymena thermophila ribozyme. 2. Kinetic description of the reaction of an RNA substrate that forms a mismatch at the active site. *Biochemistry* (1990), 29(44), 10172-80.
- v. Knitt, Deborah S.; Herschlag, Daniel. pH Dependencies of the Tetrahymena Ribozyme Reveal an Unconventional Origin of an Apparent pKa. *Biochemistry* (1996), 35(5), 1560-70.
- vi. Bevilacqua, Philip C.; Sugimoto, Naoki; Turner, Douglas H.. A mechanistic framework for the second step of splicing catalyzed by the Tetrahymena ribozyme. *Biochemistry* (1996), 35(2), 648-58.
- vii. Li, Yi; Bevilacqua, Philip C.; Mathews, David; Turner, Douglas H.. Thermodynamic and activation parameters for binding of a pyrene-labeled substrate by the Tetrahymena ribozyme: docking is not diffusion-controlled and is driven by a favorable entropy change. *Biochemistry* (1995), 34(44), 14394-9.
- viii. Banerjee, Alok Raj; Turner, Douglas H.. The time dependence of chemical modification reveals slow steps in the folding of a group I ribozyme. *Biochemistry* (1995), 34(19), 6504-12.
- ix. Zarrinkar, Patrick P.; Williamson, James R.. The P9.1-P9.2 peripheral extension helps guide folding of the Tetrahymena ribozyme. *Nucleic Acids Res.* (1996), 24(5), 854-8.
- x. Strobel, Scott A.; Cech, Thomas R.. Minor groove recognition of the conserved G.cntdot.U pair at the Tetrahymena ribozyme reaction site. *Science* (Washington, D. C.) (1995), 267(5198), 675-9.
- xi. Strobel, Scott A.; Cech, Thomas R.. Exocyclic Amine of the Conserved G.cntdot.U Pair at the Cleavage Site of the Tetrahymena Ribozyme Contributes to 5'-Splice Site Selection and Transition State Stabilization. *Biochemistry* (1996), 35(4), 1201-11.
- xii. Sullenger, Bruce A.; Cech, Thomas R.. Ribozyme-mediated repair of defective mRNA by targeted trans-splicing. *Nature* (London) (1994), 371(6498), 619-22.
- xiii. Robertson, H.D.; Altman, S.; Smith, J.D. *J. Biol. Chem.*, 247, 5243-5251 (1972).
- xiv. Forster, Anthony C.; Altman, Sidney. External guide sequences for an RNA enzyme. *Science* (Washington, D. C., 1883-) (1990), 249(4970), 783-6.
- xv. Yuan, Y.; Hwang, E. S.; Altman, S. Targeted cleavage of mRNA by human RNase P. *Proc. Natl. Acad. Sci. USA* (1992) 89, 8006-10.
- xvi. Harris, Michael E.; Pace, Norman R.. Identification of phosphates involved in catalysis by the ribozyme RNase P RNA. *RNA* (1995), 1(2), 210-18.
- xvii. Pan, Tao; Loria, Andrew; Zhong, Kun. Probing of tertiary interactions in RNA: 2'-hydroxyl-base contacts between the RNase P RNA and pre-tRNA. *Proc. Natl. Acad. Sci. U. S. A.* (1995), 92(26), 12510-14.
- xviii. Pyle, Anna Marie; Green, Justin B.. Building a Kinetic Framework for Group II Intron Ribozyme Activity: Quantitation of Interdomain Binding and Reaction Rate. *Biochemistry* (1994), 33(9), 2716-25.
- xix. Michels, William J. Jr.; Pyle, Anna Marie. Conversion of a Group II Intron into a New Multiple-Turnover Ribozyme that Selectively Cleaves Oligonucleotides: Elucidation of Reaction Mechanism and Structure/Function Relationships. *Biochemistry* (1995), 34(9), 2965-77.
- xx. Zimmerly, Steven; Guo, Huatao; Eskes, Robert; Yang, Jian; Perlman, Philip S.; Lambowitz, Alan M.. A group II intron RNA is a catalytic component of a DNA endonuclease involved in intron mobility. *Cell* (Cambridge, Mass.) (1995), 83(4), 529-38.
- xxi. Griffin, Edmund A., Jr.; Qin, Zhifeng; Michels, Williams J., Jr.; Pyle, Anna Marie. Group II intron ribozymes that cleave DNA and RNA linkages with similar efficiency, and lack contacts with substrate 2'-hydroxyl groups. *Chem. Biol.* (1995), 2(11), 761-70.
- xxii. Michel, Francois; Ferat, Jean Luc. Structure and activities of group II introns. *Annu. Rev. Biochem.* (1995), 64, 435-61.
- xxiii. Abramovitz, Dana L.; Friedman, Richard A.; Pyle, Anna Marie. Catalytic role of 2'-hydroxyl groups within a group II intron active site. *Science* (Washington, D. C.) (1996), 271(5254), 1410-13.
- xxiv. Daniels, Danette L.; Michels, William J., Jr.; Pyle, Anna Marie. Two competing pathways for self-splicing by group II introns: a quantitative analysis of in vitro reaction rates and products. *J. Mol. Biol.* (1996), 256(1), 31-49.
- xxv. Guo, Hans C. T.; Collins, Richard A.. Efficient trans-cleavage of a stem-loop RNA substrate by a ribozyme derived from Neurospora VS RNA. *EMBO J.* (1995), 14(2), 368-76.
- xxvi. Scott, W.G.; Finch, J.T.; Aaron, K. The crystal structure of an all RNA hammerhead ribozyme: A proposed mechanism for RNA catalytic cleavage. *Cell*, (1995), 81, 991-1002.

- xxvii . McKay, Structure and function of the hammerhead ribozyme: an unfinished story. *RNA*, (1996), 2, 395-403.
- xxviii . Long, D., Uhlenbeck, O., Hertel, K. Ligation with hammerhead ribozymes. US Patent No. 5,633,133.
- xxix . Hertel, K.J., Herschlag, D., Uhlenbeck, O. A kinetic and thermodynamic framework for the hammerhead ribozyme reaction. *Biochemistry*, (1994) 33, 3374-3385. Beigelman, L., *et al.*, Chemical modifications of hammerhead ribozymes. *J. Biol. Chem.*, (1995) 270, 25702-25708.
- xxx . Beigelman, L., *et al.*, Chemical modifications of hammerhead ribozymes. *J. Biol. Chem.*, (1995) 270, 25702-25708.
- xxxi . Hampel, Arnold; Tritz, Richard; Hicks, Margaret; Cruz, Phillip. 'Hairpin' catalytic RNA model: evidence for helices and sequence requirement for substrate RNA. *Nucleic Acids Res.* (1990), 18(2), 299-304.
- xxxii . Chowrira, Bharat M.; Berzal-Herranz, Alfredo; Burke, John M.. Novel guanosine requirement for catalysis by the hairpin ribozyme. *Nature (London)* (1991), 354(6351), 320-2.
- xxxiii . Berzal-Herranz, Alfredo; Joseph, Simpson; Chowrira, Bharat M.; Butcher, Samuel E.; Burke, John M.. Essential nucleotide sequences and secondary structure elements of the hairpin ribozyme. *EMBO J.* (1993), 12(6), 2567-73.
- xxxiv . Joseph, Simpson; Berzal-Herranz, Alfredo; Chowrira, Bharat M.; Butcher, Samuel E.. Substrate selection rules for the hairpin ribozyme determined by in vitro selection, mutation, and analysis of mismatched substrates. *Genes Dev.* (1993), 7(1), 130-8.
- xxxv . Berzal-Herranz, Alfredo; Joseph, Simpson; Burke, John M.. In vitro selection of active hairpin ribozymes by sequential RNA-catalyzed cleavage and ligation reactions. *Genes Dev.* (1992), 6(1), 129-34.
- xxxvi . Hegg, Lisa A.; Fedor, Martha J.. Kinetics and Thermodynamics of Intermolecular Catalysis by Hairpin Ribozymes. *Biochemistry* (1995), 34(48), 15813-28.
- xxxvii . Grasby, Jane A.; Mersmann, Karin; Singh, Mohinder; Gait, Michael J.. Purine Functional Groups in Essential Residues of the Hairpin Ribozyme Required for Catalytic Cleavage of RNA. *Biochemistry* (1995), 34(12), 4068-76.
- xxxviii . Schmidt, Sabine; Beigelman, Leonid; Karpeisky, Alexander; Usman, Nassim; Sorensen, Ulrik S.; Gait, Michael J.. Base and sugar requirements for RNA cleavage of essential nucleoside residues in internal loop B of the hairpin ribozyme: implications for secondary structure. *Nucleic Acids Res.* (1996), 24(4), 573-81.
- xxxix . Perrotta, Anne T.; Been, Michael D.. Cleavage of oligoribonucleotides by a ribozyme derived from the hepatitis .delta. virus RNA sequence. *Biochemistry* (1992), 31(1), 16-21.
- xl . Perrotta, Anne T.; Been, Michael D.. A pseudoknot-like structure required for efficient self-cleavage of hepatitis delta virus RNA. *Nature (London)* (1991), 350(6317), 434-6.
- xli . Puttaraju, M.; Perrotta, Anne T.; Been, Michael D.. A circular trans-acting hepatitis delta virus ribozyme. *Nucleic Acids Res.* (1993), 21(18), 4253-8.

**Table II:****A. 2.5  $\mu$ mol Synthesis Cycle ABI 394 Instrument**

Reagent	Equivalents	Amount	Wait Time* DNA	Wait Time* 2'-O-methyl	Wait Time*RNA
Phosphoramidites	6.5	163 $\mu$ L	45 sec	2.5 min	7.5 min
S-Ethyl Tetrazole	23.8	238 $\mu$ L	45 sec	2.5 min	7.5 min
Acetic Anhydride	100	233 $\mu$ L	5 sec	5 sec	5 sec
N-Methyl Imidazole	186	233 $\mu$ L	5 sec	5 sec	5 sec
TCA	176	2.3 mL	21 sec	21 sec	21 sec
Iodine	11.2	1.7 mL	45 sec	45 sec	45 sec
Beaucage	12.9	645 $\mu$ L	100 sec	300 sec	300 sec
Acetonitrile	NA	6.67 mL	NA	NA	NA

**B. 0.2  $\mu$ mol Synthesis Cycle ABI 394 Instrument**

Reagent	Equivalents	Amount	Wait Time* DNA	Wait Time* 2'-O-methyl	Wait Time*RNA
Phosphoramidites	15	31 $\mu$ L	45 sec	233 sec	465 sec
S-Ethyl Tetrazole	38.7	31 $\mu$ L	45 sec	233 min	465 sec
Acetic Anhydride	655	124 $\mu$ L	5 sec	5 sec	5 sec
N-Methyl Imidazole	1245	124 $\mu$ L	5 sec	5 sec	5 sec
TCA	700	732 $\mu$ L	10 sec	10 sec	10 sec
Iodine	20.6	244 $\mu$ L	15 sec	15 sec	15 sec
Beaucage	7.7	232 $\mu$ L	100 sec	300 sec	300 sec
Acetonitrile	NA	2.64 mL	NA	NA	NA

**C. 0.2  $\mu$ mol Synthesis Cycle 96 well Instrument**

Reagent	Equivalents:DNA/ 2'-O-methyl/Ribo	Amount: DNA/2'-O- methyl/Ribo	Wait Time* DNA	Wait Time* 2'-O- methyl	Wait Time* Ribo
Phosphoramidites	22/33/66	40/60/120 $\mu$ L	60 sec	180 sec	360sec
S-Ethyl Tetrazole	70/105/210	40/60/120 $\mu$ L	60 sec	180 min	360 sec
Acetic Anhydride	265/265/265	50/50/50 $\mu$ L	10 sec	10 sec	10 sec
N-Methyl Imidazole	502/502/502	50/50/50 $\mu$ L	10 sec	10 sec	10 sec
TCA	238/475/475	250/500/500 $\mu$ L	15 sec	15 sec	15 sec
Iodine	6.8/6.8/6.8	80/80/80 $\mu$ L	30 sec	30 sec	30 sec
Beaucage	34/51/51	80/120/120	100 sec	200 sec	200 sec
Acetonitrile	NA	1150/1150/1150 $\mu$ L	NA	NA	NA

- Wait time does not include contact time during delivery.

Table III: HBV Strains and Accession numbers

Accession Number	NAME
AF100308.1	AF100308 Hepatitis B virus strain 2-18, complete
AB026815.1	AB026815 Hepatitis B virus DNA, complete genome,
AB033559.1	AB033559 Hepatitis B virus DNA, complete genome,
AB033558.1	AB033558 Hepatitis B virus DNA, complete genome,
AB033557.1	AB033557 Hepatitis B virus DNA, complete genome,
AB033556.1	AB033556 Hepatitis B virus DNA, complete genome,
AB033555.1	AB033555 Hepatitis B virus DNA, complete genome,
AB033554.1	AB033554 Hepatitis B virus DNA, complete genome,
AB033553.1	AB033553 Hepatitis B virus DNA, complete genome,
AB033552.1	AB033552 Hepatitis B virus DNA, complete genome,
AB033551.1	AB033551 Hepatitis B virus DNA, complete genome,
AB033550.1	AB033550 Hepatitis B virus DNA, complete genome
AF143308.1	AF143308 Hepatitis B virus clone WB1254, complete
AF143307.1	AF143307 Hepatitis B virus clone RM518, complete
AF143306.1	AF143306 Hepatitis B virus clone RM517, complete
AF143305.1	AF143305 Hepatitis B virus clone RM501, complete
AF143304.1	AF143304 Hepatitis B virus clone HD319, complete
AF143303.1	AF143303 Hepatitis B virus clone HD1406, complete
AF143302.1	AF143302 Hepatitis B virus clone HD1402, complete
AF143301.1	AF143301 Hepatitis B virus clone BW1903, complete
AF143300.1	AF143300 Hepatitis B virus clone 7832-G4, complete
AF143299.1	AF143299 Hepatitis B virus clone 7744-G9, complete
AF143298.1	AF143298 Hepatitis B virus clone 7720-G8, complete
AB026814.1	AB026814 Hepatitis B virus DNA, complete genome,
AB026813.1	AB026813 Hepatitis B virus DNA, complete genome,
AB026812.1	AB026812 Hepatitis B virus DNA, complete genome,
AB026811.1	AB026811 Hepatitis B virus DNA, complete genome,
AJ131956.1	HBV131956 Hepatitis B virus complete genome,
AF151735.1	AF151735 Hepatitis B virus, complete genome
AF090842.1	AF090842 Hepatitis B virus strain G5.27295, complete
AF090841.1	AF090841 Hepatitis B virus strain G4.27241, complete
AF090840.1	AF090840 Hepatitis B virus strain G3.27270, complete
AF090839.1	AF090839 Hepatitis B virus strain G2.27246, complete
AF090838.1	AF090838 Hepatitis B virus strain P1.27239, complete
Y18858.1	HBV18858 Hepatitis B virus complete genome, isolate
Y18857.1	HBV18857 Hepatitis B virus complete genome, isolate
D12980.1	HPBCG Hepatitis B virus subtype adr(SRADR) DNA,
Y18856.1	HBV18856 Hepatitis B virus complete genome, isolate
Y18855.1	HBV18855 Hepatitis B virus complete genome, isolate
AJ131133.1	HBV131133 Hepatitis B virus, complete genome, strain
X80925.1	HBVP6PCXX Hepatitis B virus (patient 6) complete
X80926.1	HBVP5PCXX Hepatitis B virus (patient 5) complete
X80924.1	HBVP4PCXX Hepatitis B virus (patient 4) complete



AF100309.1	Hepatitis B virus strain 56, complete genome
AF068756.1	AF068756 Hepatitis B virus, complete genome
AF043593.1	AF043593 Hepatitis B virus isolate 6/89, complete
Y07587.1	HBVAYWGEN Hepatitis B virus, complete genome
D28880.1	D28880 Hepatitis B virus DNA, complete genome, strain
X98076.1	HBVDEFVP3 Hepatitis B virus complete genome with
X98075.1	HBVDEFVP2 Hepatitis B virus complete genome with
X98074.1	HBVDEFVP1 Hepatitis B virus complete genome with
X98077.1	HBVCGWITY Hepatitis B virus complete genome, wild type
X98072.1	HBVCGINSC Hepatitis B virus complete genome with
X98073.1	HBVCGINCX Hepatitis B virus complete genome with
U95551.1	U95551 Hepatitis B virus subtype ayw, complete genome
D23684.1	HPBC6T588 Hepatitis B virus (C6-TKB588) complete genome
D23683.1	HPBC5HKO2 Hepatitis B virus (C5-HBVKO2) complete genome
D23682.1	HPBB5HKO1 Hepatitis B virus (B5-HBVKO1) complete genome
D23681.1	HPBC4HST2 Hepatitis B virus (C4-HBVST2) complete genome
D23680.1	HPBB4HST1 Hepatitis B virus (B4-HBVST1) complete genome
D00331.1	HPBADW3 Hepatitis B virus genome, complete genome
D00330.1	HPBADW2 Hepatitis B virus genome, complete genome
D50489.1	HPBA11A Hepatitis B virus DNA, complete genome
D23679.1	HPBA3HMS2 Hepatitis B virus (A3-HBVMS2) complete genome
D23678.1	HPBA2HYS2 Hepatitis B virus (A2-HBVYS2) complete genome
D23677.1	HPBA1HKK2 Hepatitis B virus (A1-HBVKK2) complete genome
D16665.1	HPBADRM Hepatitis B virus DNA, complete genome
D00329.1	HPBADW1 Hepatitis B virus (HBV) genome, complete genome
X97851.1	HBVP6CSX Hepatitis B virus (patient 6) complete genome
X97850.1	HBVP4CSX Hepatitis B virus (patient 4) complete genome
X97849.1	HBVP3CSX Hepatitis B virus (patient 3) complete genome
X97848.1	HBVP2CSX Hepatitis B virus (patient 2) complete genome
X51970.1	HVHEPB Hepatitis B virus (HBV 991) complete genome
M38636.1	HPBCGADR Hepatitis B virus, subtype adr, complete genome
X59795.1	HBVAYWMCG Hepatitis B virus (ayw subtype mutant)
M38454.1	HPBADR1CG Hepatitis B virus , complete genome
M32138.1	HPBHBVAA Hepatitis B virus variant HBV-alpha1, complete
J02203.1	HPBAYW Human hepatitis B virus (subtype ayw), complete
M12906.1	HPBADRA Hepatitis B virus subtype adr, complete genome
M54923.1	HPBADWZ Hepatitis B virus (subtype adw), complete genome
L27106.1	HPBMUT Hepatitis B virus mutant complete genome

**Table IV: HBV Substrate Sequence**

NT Position*	SUBSTRATE	SEQ ID
82	CUAUCGUCCCCUUCUUCAUC	1.
101	CUACCGUUCGGGCC	2.
159	CUUCUCAUCU	3.
184	CUUCCUUCACCAC	4.
269	GACUCUCAGAAUGUCAACGAC	5.
381	CUGUAGGCAUAAAUGGUCUG	6.
401	GUUCACCAGCACCAUGCAACUUUUU	7.
424	UUUCACGUCUGCCUAAUCAUC	8.
524	AUUUGGAGCUUC	9.
562	CUGACUUCUUUCUUCUAUUC	10.
649	CUCACCAUACCGCACUCA	11.
667	GGCAAGCUAUUCUGUG	12.
717	GGAAGUAAUUGGAAGAC	13.
758	CAGCUAUGUCA AUGUUA	14.
783	CUAAAAUCGGCCUAAAAUCAGAC	15.
812	CAUUUCCUGUCUCACUUUUGGAAGAG	16.
887	UCCUGCUUACAGAC	17.
922	CAACACUUCGGAAACUACUGUUGUAG	18.
989	CUCGCCUCGCAGACGAAGGUCUC	19.
1009	CAUUCGCCGCGUCGCAGAAG	20.
1031	AUCUCAAUUCUGGGAUUCUCAA	21.
1052	AUGUUAGUAUCCCUUGGACUC	22.
1072	CAUAAGGUGGGAAACUUUACUG	23.
1109	CUGUACCUAUUCUUUAAAUCC	24.
1127	CUGAGUGGCAAACUCCC	25.
1271	CCAAUAUUCUGCCCUUGGACAA	26.
1297	AUUAACCAUAUUAUCCUGAACA	27.
1319	AUGCAGUAAUCAUUAUUCAAAACUA	28.
1340	AAACUAGGCAUUA	29.
1370	AGGCGGGCAUUCUAUUAAGAGAG	30.
1393	GAAACUACGCGCAGCGCCUCAUUUUGU	31.
1412	CAUUUUGUGGGUCACCAUA	32.
1441	CAAGAGCUACAGCAUGGG	33.

```
LOCUS      HPBADR1CG      3221 bp      DNA      circular      VRL
06-MAR-1995
DEFINITION Hepatitis B virus , complete genome.
ACCESSION  M38454
```

\*The nucleotide number referred to in that table is the position of the 5' end of the oligo in this sequence.

TABLE V: HUMAN HBV HAMMERHEAD RIBOZYME AND TARGET SEQUENCE

Pos	Substrate	Seq ID	Hammerhead	Seq ID
13	CCACCACU U UCCACCAA	34	UUGGUGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUGGUGG	7434
14	CACCACUU U CCACCAA	35	UUUGGUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGUGGUG	7435
15	ACCACUUU C CACCAAAC	36	GUUUGGUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGUGGU	7436
25	ACCAAACU C UUCAAGAU	37	AUCUUGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUUUGGU	7437
27	CAAACUCU U CAAGAUC	38	GGAUCUUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAGUUUG	7438
28	AAACUCUU C AAGAUC	39	GGGAUCUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGAGUUU	7439
34	UUCAAGAU C CCAGAGUC	40	GACUCUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUCUUGAA	7440
42	CCCAGAGU C AGGGCCCU	41	AGGGCCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUCUGGG	7441
53	GGCCUGU A CUUCCUG	42	CAGGAAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGGGCC	7442
56	CCUGUACU U UCCUGCUG	43	CAGCAGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUACAGG	7443
57	CUGUACUU U CCUGCUGG	44	CCAGCAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGUACAG	7444
58	UGUACUUU C CUGCUGGU	45	ACCAGCAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGUACA	7445
71	UGGUGGCU C CAGUUCAG	46	CUGAACUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGCCACCA	7446
76	GCUCCAGU U CAGGAACA	47	UGUUCUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUGGAGC	7447
77	CUCCAGU C AGGAACAG	48	CUGUCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUGGAG	7448
97	GCCUGCU C AGAAUACU	49	AGUAUUCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGCAGGGC	7449
103	CUCAGAAU A CUGUCUCU	50	AGAGACAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUCUGAG	7450
108	AAUACUGU C UCUGCCA	51	AUGGCAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGUAU	7451
110	UACUGUCU C UGCCAU	52	AUAUGGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGACAGUA	7452
117	UCUGCCA A UCGUCAU	53	AUUGACGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGGCAGA	7453
119	UGCCAUAU C GUCAAUCU	54	AGAUUGAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUAUGGCA	7454
122	CAUAUCGU C AAUCUUAU	55	AUAAGAUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACGUAUUG	7455
126	UCGUCAAU C UUAUCGAA	56	UUCGAUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUGACGA	7456
128	GUCAAUCU U AUCGAAGA	57	UCUUCGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAUUGAC	7457
129	UCAAUUU A UCGAAGAC	58	GUCUUCGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGAUUGA	7458
131	AAUCUUAU C GAAGACUG	59	CAGUCUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUAAGAUU	7459
150	GACCUGU A CCGAACAU	60	AUGUUCGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGGGUC	7460
168	GAGAACAU C GCAUCAGG	61	CCUGAUGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGUUCUC	7461
173	CAUCGCAU C AGGACUCC	62	GGAGUCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGCGAUG	7462
180	UCAGGACU C CUAGGACC	63	GGUCCUAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUCCUGA	7463
183	GGACUCCU A GGACCCCU	64	AGGGGUCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGAGUCC	7464
195	CCCCUGCU C GUGUACA	65	UGUAACAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGCAGGGG	7465
200	GCUCGUGU U ACAGGCGG	66	CCGCCUGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACACGAGC	7466
201	CUCGUGUU A CAGGCGGG	67	CCCGCCUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACACGAG	7467
212	GGCGGGGU U UUCUUGU	68	ACAAGAAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACCCGCC	7468
213	GCGGGGUU U UUCUUGU	69	AACAAGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACCCGC	7469
214	CGGGGUUU U UCUUGUUG	70	CAACAAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAACCCG	7470
215	GGGUUUUU U CUUGUUGA	71	UCAACAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAACCC	7471
216	GGGUUUUU C UUGUUGAC	72	GUCAACAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAACCC	7472
218	GUUUUUUU U GUUGACAA	73	UUGUCAAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAAAAAC	7473
221	UUUCUUGU U GACAAAA	74	UUUUUGUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAAGAAA	7474
231	ACAAAAAU C CUCACAAU	75	AUUGUGAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUUUUGU	7475
234	AAAAUCCU C ACAAUACC	76	GGUAUUGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGAUUUU	7476
240	CUCACAAU A CCACAGAG	77	CUCUGUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUGUGAG	7477
250	CACAGAGU C UAGACUCG	78	CGAGUCUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUCUGUG	7478
252	CAGAGUCU A GACUCGUG	79	CACGAGUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGACUCUG	7479

257	UCUAGACU C GUGGUGGA	80	UCCACCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCUAGA	7480
268	GGUGGACU U CUCUCAAU	81	AUUGAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCACC	7481
269	GUGGACUU C UCUCAAUU	82	AAUUGAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUCCAC	7482
271	GGACUUCU C UCAAUUUU	83	AAAAUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGUCC	7483
273	ACUUCUCU C AAUUUUUU	84	AGAAAAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGAAGU	7484
277	CUCUCAAU U UUCUAGGG	85	CCCUAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGAGAG	7485
278	UCUCAAUU U UCUAGGGG	86	CCCCUAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUGAGA	7486
279	CUCAAUUU U CUAGGGGG	87	CCCCCUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAUUGAG	7487
280	UCAAUUUU C UAGGGGGA	88	UCCCCCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAUUGA	7488
282	AAUUUUUU A GGGGGGAA	89	GUUCCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAAAUU	7489
301	CCGUGUGU C UUGGCCAA	90	UUGGCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACACGG	7490
303	GUGUGUCU U GGCCAAA	91	UUUUGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACACAC	7491
313	GCCAAAUA U CGCAGUCC	92	GGACUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUGGC	7492
314	CCAAAUAU C GCAGUCCC	93	GGGACUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUUUUG	7493
320	UUCGCAGU C CCAAUUCU	94	AGAUUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGCGAA	7494
327	UCCCAAAU C UCCAGUCA	95	UGACUGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUGGGA	7495
329	CCAAAUCU C CAGUCACU	96	AGUGACUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUUUGG	7496
334	UCUCCAGU C ACUCACCA	97	UGGUGAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGGAGA	7497
338	CAGUCACU C ACCAACCU	98	AGGUUGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGACUG	7498
349	CAACCUGU U GUCCUCCA	99	UGGAGGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGGUGG	7499
352	CCUGUUGU C CUCCAAUU	100	AAUUGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAACAGG	7500
355	GUUGUCCU C CAAUUUGU	101	ACAAAUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGACAAC	7501
360	CCUCCAAU U UGUCCUGG	102	CCAGGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGGAGG	7502
361	CUCCAAUU U GUCCUGGU	103	ACCAGGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUGGAG	7503
364	CAAUUUGU C CUGGUUAU	104	AUAACCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAUUGG	7504
370	GUCCUGGU U AUCGUGG	105	CCAGCGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCAGGAC	7505
371	UCCUGGUU A UCGUGGA	106	UCCAGCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCAGGA	7506
373	CUGGUUAU C GCUGGAUG	107	CAUCCAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAACCAG	7507
385	GGAUGUGU C UGCGGCGU	108	ACGCCGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACAUCC	7508
394	UGCGGCGU U UUAUCAUC	109	GAUGAUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGCCGCA	7509
395	GCGGCGUU U UAUCAUCU	110	AGAUGAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACGCCGC	7510
396	CGGCGUUU U AUCAUCUU	111	AAGAUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACGCCG	7511
397	GGCGUUUU A UCAUCUUC	112	GAAGAUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAACGCC	7512
399	CGUUUUAA C AUCUCCU	113	AGGAAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAAACG	7513
402	UUUAUCAU C UUCCUCUG	114	CAGAGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUAAA	7514
404	UAUCAUCU U CCUCUGCA	115	UGCAGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUGAUA	7515
405	AUCAUCUU C CUCUGCAU	116	AUGCAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAUGAU	7516
408	AUCUCCU C UGCAUCCU	117	AGGAUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAAGAU	7517
414	CUCUGCAU C CUGCUGCU	118	AGCAGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCAGAG	7518
423	CUGCUGCU A UGCCUCAU	119	AUGAGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGCAG	7519
429	CUAUGCCU C AUCUUCUU	120	AAGAAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCAUAG	7520
432	UGCCUCAU C UUCUUGUU	121	AACAAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAGGCA	7521
434	CCUCAUCU U CUUGUUGG	122	CCAACAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUGAGG	7522
435	CUCAUCUU C UUGUUGGU	123	ACCAACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAUGAG	7523
437	CAUCUUCU U GUUGGUUC	124	GAACCAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGAUG	7524
440	CUUCUUGU U GGUUCUUC	125	GAAGAACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAGAAG	7525
444	UUGUUGGU U CUUCUGGA	126	UCCAGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCAACAA	7526
445	UGUUGGUU C UUCUGGAC	127	GUCCAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCACAA	7527
447	UUGGUUCU U CUGGACUA	128	UAGUCCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAACCAA	7528
448	UGGUUCUU C UGGACUAU	129	AUAGUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAACCA	7529
455	UCUGGACU A UCAAGGUA	130	UACCUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCAGA	7530

457	UGGACUUAU C AAGGUAUG	131	CAUACCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGUCCA	7531
463	AUCAAGGU A UGUUGCCC	132	GGGCAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUUGAU	7532
467	AGGUAUGU U GCCC GUUU	133	AAACGGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUACCU	7533
474	UUGCCCGU U UGUCCUCU	134	AGAGGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGGCAA	7534
475	UGCCCGUU U GUCCUCUA	135	UAGAGGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACGGGCA	7535
478	CCGUUUGU C CUCUAAU	136	AAUAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAACGG	7536
481	UUUGUCCU C UAAUUGCA	137	UGGAAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGACAAA	7537
483	UGUCCUCU A AUUCCAGG	138	CCUGGAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGGACA	7538
486	CCUCUAAU U CCAGGAUC	139	GAUCCUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAGAGG	7539
487	CUCUAAU C CAGGAUCA	140	UGAUCCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAGAG	7540
494	UCCAGGAU C AUCAACAA	141	UUGUUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCUGGA	7541
497	AGGAUCAU C AACAACCA	142	UGGUUGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUCCU	7542
535	GCACAACU C CUGCUCAA	143	UUGAGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUGUGC	7543
541	CUCCUGCU C AAGGAACC	144	GGUUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGGAG	7544
551	AGGAACCU C UAUGUUUC	145	GAAACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUCCU	7545
553	GAACCUCU A UGUUCCCC	146	GGGAAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGGUUC	7546
557	CUCUAGU U UCCCUCAU	147	AUGAGGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUAGAG	7547
558	UCUAUGUU U CCCUCAUG	148	CAUGAGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAUAGA	7548
559	CUAUGUUU C CCUCAUGU	149	ACAUGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACAUAG	7549
563	GUUCCCCU C AUGUUGCU	150	AGCAACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGAAAC	7550
568	CCUCAUGU U GCUGUACA	151	UGUACAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUGAGG	7551
574	GUUGCUGU A CAAAACCU	152	AGGUUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGCAAC	7552
583	CAAAACCU A CGGACGGA	153	UCCGUCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUUUG	7553
604	GCACCUGU A UUCCCAUC	154	GAUGGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGGUGC	7554
606	ACCUGUUAU U CCCAUCCC	155	GGGAUGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUACAGGU	7555
607	CCUGUAAU C CCAUCCCA	156	UGGGAUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUACAGG	7556
612	AUCCCCAU C CCAUCAUC	157	GAUGAUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGGAAU	7557
617	CAUCCCCAU C AUCUUGGG	158	CCCAAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGGAGU	7558
620	CCCAUCAU C UUGGGCUU	159	AAGCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUGGG	7559
622	CAUCAUCU U GGGCUUUC	160	GAAAGCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUGAUG	7560
628	CUUGGGCU U UCGCAAAA	161	UUUUGCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCCAAG	7561
629	UUGGGCUU U CGCAAAAU	162	AUUUUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCCCAA	7562
630	UGGGCUUU C GCAAAUA	163	UAUUUUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGCCCA	7563
638	CGCAAAAU A CCUAUGGG	164	CCCAUAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUGCG	7564
642	AAAUACCU A UGGGAGUG	165	CACUCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUUUU	7565
656	GUGGGCCU C AGUCCGUU	166	AACGGACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCAC	7566
660	GCCUCAGU C CGUUUCUC	167	GAGAAACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGAGGC	7567
664	CAGUCCGU U UCUCUUGG	168	CCAAGAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGACUG	7568
665	AGUCCGUU U CUCUUGGC	169	GCCAAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACGGACU	7569
666	GUCCGUUU C UCUGGCU	170	AGCCAAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACGGAC	7570
668	CCGUUUUCU C UUGGCUCA	171	UGAGCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAACGG	7571
670	GUUUUCUCU U GGCUCAGU	172	ACUGAGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGAAAC	7572
675	UCUUGGCU C AGUUUACU	173	AGUAAACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCAAGA	7573
679	GGCUCAGU U UACUAGUG	174	CACUAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGAGCC	7574
680	GCUCAGUU U ACUAGUGC	175	GCACUAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACUGAGC	7575
681	CUCAGUUU A CUAGUGCC	176	GGCACUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACUGAG	7576
684	AGUUUACU A GUGCCAUU	177	AAUGGCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAAACU	7577
692	AGUGCCAU U UGUUCAGU	178	ACUGAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGCACU	7578
693	GUGCCAUU U GUUCAGUG	179	CACUGAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGGCAC	7579
696	CCAUUUGU U CAGUGGUU	180	AACCACUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAUUGG	7580
697	CAUUUGUU C AGUGGUUC	181	GAACCACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAAAUG	7581

704	UCAGUGGU U CGUAGGGC	182	GCCCUACG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACCACUGA	7582
705	CAGUGGUU C GUAGGGCU	183	AGCCCUAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACCACUG	7583
708	UGGUUCGU A GGGCUUUC	184	GAAAGCCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACGAACCA	7584
714	GUAGGGCU U UCCCCAC	185	GUGGGGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGCCCUAC	7585
715	UAGGGCUU U CCCCCACU	186	AGUGGGGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGCCCUA	7586
716	AGGGCUUU C CCCCACUG	187	CAGUGGGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGCCCU	7587
726	CCCACUGU C UGGCUUUC	188	GAAAGCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGUGGG	7588
732	GUCUGGCU U UCAGUUAU	189	AUAACUGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGCCAGAC	7589
733	UCUGGCUU U CAGUUAUA	190	UAUAACUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGCCAGA	7590
734	CUGGCUUU C AGUUAUAU	191	AUAUAACU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGCCAG	7591
738	CUUUCAGU U AUAUGGAU	192	AUCCAUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUGAAAG	7592
739	UUUCAGUU A UAUGGAUG	193	CAUCCAUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACUGAAA	7593
741	UCAGUUAU A UGGAUGAU	194	AUCAUCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUAACUGA	7594
755	GAUGUGGU U UUGGGGGC	195	GCCCCCAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACCACAUC	7595
756	AUGUGGUU U UGGGGGCC	196	GGCCCCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACCACAU	7596
757	UGUGGUUU U GGGGGCCA	197	UGGCCCCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAACCACA	7597
769	GGCCAAGU C UGUACAAC	198	GUUGUACA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUUGGCC	7598
773	AAGUCUGU A CAACAUCU	199	AGAUGUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGACTU	7599
780	UACAACAU C UUGAGUCC	200	GGACUCA A CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGUUGUA	7600
782	CAACAUCU U GAGUCCCU	201	AGGGACUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAUGUUG	7601
787	UCUUGAGU C CCUUAUUG	202	CAUAAAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACUCAAGA	7602
791	GAGUCCCU U UAUGCCGC	203	GCGGCAUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGGACUC	7603
792	AGUCCCUU U AUGCCGCU	204	AGCGGCAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGGACUC	7604
793	GUCCCUUU A UGCCGUG	205	CAGCGGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGGGAC	7605
803	GCCGUGU U ACCAAUUU	206	AAAUUGGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAGCGGC	7606
804	CCGUGUU A CCAAUUUU	207	AAAAUUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AACAGCGG	7607
810	UUACCAAU U UUCUUUUG	208	CAAAAGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUGGUAA	7608
811	UACCAAUU U UCUUUUGU	209	ACAAAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAUUGGUA	7609
812	ACCAAUUU U CUUUUGUC	210	GACAAAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAUUGGU	7610
813	CCA AUUUU C UUUUGUCU	211	AGACAAAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAAUUGG	7611
815	AAUUUUUCU U UUGUCUUU	212	AAAGACAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAAAAU	7612
816	AUUUUUCU U UGUCUUUG	213	CAAAGACA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGAAAAU	7613
817	UUUUUUUU U GUCUUUGG	214	CCAAAGAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAAGAAAA	7614
820	UCUUUUGU C UUUGGUUA	215	UACCCAAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAAAAGA	7615
822	UUUUGUCU U UGGGUUA	216	UAUACCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGACAAA	7616
823	UUUGUCUU U GGGUAUAC	217	GUUAUCCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGACAAA	7617
828	CUUUGGGU A UACAUUA	218	UAAAUGUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACCCAAAG	7618
830	UUGGGUUA A CAUUUAAA	219	UUUAAAUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUACCCAA	7619
834	GUUAACAU U UAAACCCU	220	AGGGUUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGUAUAC	7620
835	UAUACAUU U AAACCCUC	221	GAGGGUUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAUGUAUA	7621
836	AUACAUUU A AACCUCU	222	UGAGGGUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAUGUAUA	7622
843	UAAACCCU C ACAAACA	223	UGUUUUGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGGUUUA	7623
865	AUGGGGAU A UUCCCUUA	224	UAAGGGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUCCCAU	7624
867	GGGGAUUA U CCCUUAAC	225	GUUAAGGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUUAUCCC	7625
868	GGGAUUAU C CCUUAACU	226	AGUUAAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAUAUCCC	7626
872	UAUUCCCU U AACUUAU	227	AUGAAGUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGGAAUA	7627
873	AUUCUUU A ACUUAUG	228	CAUGAAGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGGGAU	7628
877	CCUUAACU U CAUGGGAU	229	AUCCCAUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUUAAGG	7629
878	CUUAACUU C AUGGGAUA	230	UAUCCCAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGUUAAG	7630
886	CAUGGGAU A UGUAAUUG	231	CAAUUACA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUCCCAUG	7631
890	GGUAUGU A AUUGGGAG	232	CUCCCAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ACAUAUCC	7632

893	UAUGUAAU U GGGAGUUG	233	CAACUCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUACAUA	7633
900	UUGGGAGU U GGGGCACA	234	UGUGCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCCCAA	7634
910	GGGCACAU U GCCACAGG	235	CCUGUGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUGCCC	7635
924	AGGAACAU A UUGUACAA	236	UUGUACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCCU	7636
926	GAACAUU U GUACAAAA	237	UUUUGUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAUGUUC	7637
929	CAUAUUGU A CAAAAAAU	238	AUUUUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUAUUG	7638
938	CAAAAAAU C AAAAUGUG	239	CACAUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUUUG	7639
948	AAAUGUGU U UUAGGAAA	240	UUUCCUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACAUUU	7640
949	AAUGUGUU U UAGGAAAC	241	GUUUCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACACAUU	7641
950	AUGUGUUU U AGGAAACU	242	AGUUUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACACAU	7642
951	UGUGUUUU A GGAAACUU	243	AAGUUUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAACACA	7643
959	AGGAAACU U CCUGUAAA	244	UUUACAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUUCCU	7644
960	GGAAACUU C CUGUAAAC	245	GUUUACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUUUCC	7645
965	CUUCCUGU A AACAGGCC	246	GGCCUGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGGAAG	7646
975	ACAGGCCU A UUGAUUGG	247	CCAAUCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCUGU	7647
977	AGGCCUUA U GAUUGGAA	248	UUCCAAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGGCCU	7648
981	CUAUUGAU U GGAAAGUA	249	UACUUUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCAAUAG	7649
989	UGGAAAGU A UGUCAACG	250	CGUUGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUUUCCA	7650
993	AAGUAUGU C AACGAAUU	251	AAUUCGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUACUU	7651
1001	CAACGAU U GUGGGUCU	252	AGACCCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCGUUG	7652
1008	UUGUGGGU C UUUUGGGG	253	CCCCAAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCCACAA	7653
1010	GUGGGUCU U UUGGGGUU	254	AACCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCCAC	7654
1011	UGGGUCUU U UGGGGUUU	255	AAACCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGACCCA	7655
1012	GGGUCUUU U GGGGUUUG	256	CAACCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGACCC	7656
1018	UUUGGGGU U UGCGCCCC	257	GGGCGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCCCAAA	7657
1019	UUGGGGUU U GCCGCCCC	258	GGGCGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCCCAA	7658
1029	CCGCCCCU U UCACGCAA	259	UUGCGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGCGG	7659
1030	CGCCCCUU U CACGCAAU	260	AUUGCGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGGGCG	7660
1031	GCCCCUUU C ACGCAAUG	261	CAUUGCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGGGGC	7661
1045	AUGUGGAU A UUCUGCUU	262	AAGCAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCACAU	7662
1047	GUGGAUUA U CUGCUUUA	263	UAAAGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAUCCAC	7663
1048	UGGAUUAU C UGCUUUA	264	UUAAAGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUCCA	7664
1053	AUUCUGCU U UAAUGCCU	265	AGGCAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGAAU	7665
1054	UUCUGCUU U AAUGCCUU	266	AAGGCAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCAGAA	7666
1055	UCUGCUUU A AUGCCUUU	267	AAAGGCAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGCAGA	7667
1062	UAAUGCCU U UAUUGCA	268	UGCAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCAUUA	7668
1063	AAUGCCUU U AUAUGCAU	269	AUGCAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGCAUU	7669
1064	AUGCCUUU A UAUGCAUG	270	CAUGCAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGGCAU	7670
1066	GCCUUUAU A UGCAUGCA	271	UGCAUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAAGGC	7671
1076	GCAUGCAU A CAAGCAAA	272	UUUGCUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCAUGC	7672
1092	AACAGGCU U UUAUUUC	273	GAAAGUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCUGUU	7673
1093	ACAGGCUU U UACUUUCU	274	AGAAAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCCUGU	7674
1094	CAGGCUUU U ACUUUCUC	275	GAGAAAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGCCUG	7675
1095	AGGCUUUU A CUUUCUCG	276	CGAGAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGCCU	7676
1098	CUUUUACU U UCUCGCCA	277	UGGCGAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAAAAG	7677
1099	UUUUACUU U CUCGCCAA	278	UUGGCGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUAAA	7678
1100	UUUACUUU C UCGCCAAC	279	GUUGGCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGUAAA	7679
1102	UACUUUCU C GCCAACUU	280	AAGUUGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAAGUA	7680
1110	CGCCAACU U ACAAGGCC	281	GGCCUUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUGGCG	7681
1111	GCCAACUU A CAAGGCCU	282	AGGCCUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUUGGC	7682
1120	CAAGGCCU U UCUAAGUA	283	UACUUAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCUUG	7683

1121	AAGGCCUU U CUAAGUAA	284	UUACUUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGCCUU	7684
1122	AGGCCUUU C UAAGUAAA	285	UUUACUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGGCCU	7685
1124	GCCUUUCU A AGUAAACA	286	UGUUUACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAAGGC	7686
1128	UUCUAAGU A AACAGUAA	287	AUACUGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUUAGAA	7687
1135	UAAACAGU A UGUGAAC	288	GGUUCACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGUUUA	7688
1145	GUGAACCU U UACCCCGU	289	ACGGGGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUCAC	7689
1146	UGAACCUU U ACCCCGUU	290	AACGGGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGUUCA	7690
1147	GAACCUUU A CCCCUGU	291	CAACGGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGGUUC	7691
1154	UACCCCGU U GCUCGGCA	292	UGCCGAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGGGUA	7692
1158	CCGUUGCU C GGCAACGG	293	CCGUUGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAACGG	7693
1173	GGCCUGGU C UAUGCCAA	294	UUGGCAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCAGGCC	7694
1175	CCUGGUCU A UGCCAAGU	295	ACUUGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCAGG	7695
1186	CCAAGUGU U UGCUGACG	296	CGUCAGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACUUGG	7696
1187	CAAGUGUU U GCGGCUUG	297	GCGUCAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACACUUG	7697
1209	CCACUGGU U GGGGCUUG	298	CAAGCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCAGUGG	7698
1216	UUGGGGCU U GGCCAUA	299	CUAUGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCCCAA	7699
1223	UUGGCCAU A GGCCAUCA	300	UGAUGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGCCAA	7700
1230	UAGGCCAU C AGCGCAUG	301	CAUGCGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGCCUA	7701
1249	UGGAACCU U UGUGUCUC	302	GAGACACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUCCA	7702
1250	GGAACCUU U GUGUCUCC	303	GGAGACAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGUUCC	7703
1255	CUUUGUGU C UCCUCUGC	304	GCAGAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACAAAG	7704
1257	UUGUGUCU C CUCUGCCG	305	CGGCAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACACAA	7705
1260	UGUCUCCU C UGCCGAUC	306	GAUCGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGACA	7706
1268	CUGCCGAU C CAUACCGC	307	GCGGUAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCGGCAG	7707
1272	CGAUCCAU A CCGCGGAA	308	UUCGCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGAUCG	7708
1283	GCGGAACU C CUAGCCGC	309	GCGGCUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCGC	7709
1286	GAACUCCU A GCGGCUUG	310	CAAGCGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGUUC	7710
1293	UAGCCGCU U GUUUUGCU	311	AGCAAAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCGGCUA	7711
1296	CCGCUUGU U UUGCUCGC	312	GCGAGCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAGCGG	7712
1297	CGCUUGUU U UGCUCGCA	313	UGCGAGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAAGCG	7713
1298	GCUUGUUU U GCUCGCAG	314	CUGCGAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACAAGC	7714
1302	GUUUUGCU C GCAGCAGG	315	CCUGCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAAAAC	7715
1312	CAGCAGGU C UGGGCAA	316	UUGCCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUGCUG	7716
1325	GCAAAACU C AUCGGGAC	317	GUCCCGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUUUGC	7717
1328	AAACUCAU C GGGACUGA	318	UCAGUCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAGUUU	7718
1341	CUGACAAU U CUGUCGUG	319	CACGACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGUCAG	7719
1342	UGACAAU C UGUCGUGC	320	GCACGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUGUCA	7720
1346	AAUUCUGU C GUGCUCUC	321	GAGAGCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGAAU	7721
1352	GUCGUGCU C UCCCGCAA	322	UUGCGGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCACGAC	7722
1354	CGUGCUCU C CCGCAAU	323	AUUUGCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGCACG	7723
1363	CCGCAAU A UACAUCAU	324	AUGAUGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUGCGG	7724
1365	GCAAAU A CAUCAUUU	325	AAAUUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUUGC	7725
1369	AUAUACAU C AUUCCAU	326	AUGGAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUAU	7726
1372	UACAUCAU U UCCAUGGC	327	GCCAUGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUGUA	7727
1373	ACAUCAU U CCAUGGCU	328	AGCCAUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGAUGU	7728
1374	CAUCAUU C CAUGGCU	329	CAGCCAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAUGAUG	7729
1385	UGGCUUGU A GCGUGUC	330	GCACAGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGCCA	7730
1406	AACUGGAU C CUACGCGG	331	CCGCGUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCAGUU	7731
1409	UGGAUCCU A CGCGGGAC	332	GUCCCGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAUCCA	7732
1420	CGGGACGU C CUUUGUUU	333	AAACAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGUCCCG	7733
1423	GACGUCCU U UGUUACG	334	CGUAAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGACGUC	7734



1424	ACGUCCUU U GUUUACGU	335	ACGUAAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGACGU	7735
1427	UCCUUUGU U UACGUCCC	336	GGGACGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAGGA	7736
1428	CCUUUGUU U ACGUCCCG	337	CGGGACGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAAAGG	7737
1429	CUUUGUUU A CGUCCCGU	338	ACGGGACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACAAAG	7738
1433	GUUUACGU C CCGUCGGC	339	GCCGACGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGUAAAC	7739
1438	CGUCCCGU C GGCGCUGA	340	UCAGCGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGGACG	7740
1449	CGCUGAAU C CCGCGGAC	341	GUCCGCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCAGCG	7741
1465	CGACCCCU C CCGGGGCC	342	GGCCCCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGGUCG	7742
1477	GGGCCGCU U GGGGCUCU	343	AGAGCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCGGCC	7743
1484	UUGGGGCU C UACCGCCC	344	GGGCGGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCCCAA	7744
1486	GGGGCUCU A CCGCCCGC	345	GCGGGCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGCCCC	7745
1496	CGCCCGCU U CUCCGCCU	346	AGGCGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCGGGCG	7746
1497	GCCCGCUU C UCCGCCUA	347	UAGGCGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCGGGC	7747
1499	CCGCUUCU C CGCCUAU	348	AAUAGGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGCGG	7748
1505	CUCCGCCU A UUGUACCG	349	CGGUACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCGGAG	7749
1507	CCGCCUAU U GUACCGAC	350	GUCGGUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGGCGG	7750
1510	CCUAUUGU A CCGACCGU	351	ACGGUCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAUAGG	7751
1519	CCGACCGU C CACGGGGC	352	GCCCCGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGUCGG	7752
1534	GCGCACCU C UCUUUACG	353	CGUAAAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUGCGC	7753
1536	GCACCUCU C UUUACGCG	354	CGCGUAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGGUGC	7754
1538	ACCUCUCU U UACGCGGA	355	UCCGCGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGAGGU	7755
1539	CCUCUCUU U ACGCGGAC	356	GUCCGCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAGAGG	7756
1540	CUCUCUUU A CGCGGACU	357	AGUCCGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGAGAG	7757
1549	CGCGGACU C CCGGUCUG	358	CAGACGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCGCG	7758
1555	CUCCCGCU C UGUGCCUU	359	AAGGCACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGGGAG	7759
1563	CUGUGCCU U CUCAUCUG	360	CAGAUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCACAG	7760
1564	UGUGCCUU C UCAUCUGC	361	GCAGAUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGCACA	7761
1566	UGCCUUCU C AUCUGCCG	362	CGGCAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGGCA	7762
1569	CUUCUCAU C UGCCGGAC	363	GUCCGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAGAAG	7763
1588	UGUGCACU U CGCUCAC	364	GUGAAGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGCACA	7764
1589	GUGCACUU C GCUUCACC	365	GGUGAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUGCAC	7765
1593	ACUUCGCU U CACCUCUG	366	CAGAGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCGAAGU	7766
1594	CUUCGCUU C ACCUCUGC	367	GCAGAGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCGAAG	7767
1599	CUUCACCU C UGCACGUC	368	GACGUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUGAAG	7768
1607	CUGCACGU C GCAUGGAG	369	CUCCAUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGUGCAG	7769
1651	CCCAAGGU C UUGCAUAA	370	UUAUGCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUUGGG	7770
1653	CAAGGUCU U GCAUAAGA	371	UCUUAUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCUUG	7771
1658	UCUUGCAU A AGAGGACU	372	AGUCCUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCAAGA	7772
1667	AGAGGACU C UUGGACUU	373	AAGUCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCUCU	7773
1669	AGGACUCU U GGACUUUC	374	GAAAGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGUCCU	7774
1675	CUUGGACU U UCAGCAAU	375	AUUGCUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCCAAG	7775
1676	UUGGACUU U CAGCAAUG	376	CAUUGCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUCCAA	7776
1677	UGGACUUU C AGCAAUGU	377	ACAUUGC U CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGUCCA	7777
1686	AGCAAUGU C AACGACCG	378	CGGUCGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUUGCU	7778
1699	ACCGACCU U GAGGCAUA	379	UAUGCCUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUCGGU	7779
1707	UGAGGCAU A CUUCAAG	380	CUUUGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCCUCA	7780
1710	GGCAUACU U CAAAGACU	381	AGUCUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAUGCC	7781
1711	GCAUACUU C AAAGACUG	382	CAGUCUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUAUGC	7782
1725	CUGUGUGU U UAAUGAGU	383	ACUCAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACACAG	7783
1726	UGUGUGUU U AAUGAGUG	384	CACUCAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACACACA	7784
1727	GUGUGUUU A AUGAGUGG	385	CCACUCAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACACAC	7785

1743	GGAGGAGU U GGGGGAGG	386	CCUCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCCUCC	7786
1756	GAGGAGGU U AGGUUAAA	387	UUUAACCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUCCUC	7787
1757	AGGAGGUU A GGUUAAAG	388	CUUUAACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCUCCU	7788
1761	GGUUAGGU U AAAGGUCU	389	AGACCUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUAACC	7789
1762	GUUAGGUU A AAGGUUU	390	AAGACCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCUAAC	7790
1768	UUAAAGGU C UUUGUACU	391	AGUACAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUUUAA	7791
1770	AAAGGUCU U UGUACUAG	392	CUAGUACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCUUU	7792
1771	AAGGUCUU U GUACUAGG	393	CCUAGUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGACCUU	7793
1774	GUCUUUGU A CUAGGAGG	394	CCUCCUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAGAC	7794
1777	UUUGUACU A GGAGGCTG	395	CAGCCUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUACAAA	7795
1787	GAGGCUGU A GGCAUAAA	396	UUUAUGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGCCUC	7796
1793	GUAGGCAU A AAUUGGUG	397	CACCAAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCCUAC	7797
1797	GCAUAAAU U GGUGUGUU	398	AACACACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUAGC	7798
1805	UGGUGUGU U CACCAGCA	399	UGCUGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACACCA	7799
1806	GGUGUGUU C ACCAGCAC	400	GUGCUGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACACACC	7800
1824	AUGCAACU U UUCACCUC	401	AGGUGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUGCAU	7801
1825	UGCAACUU U UUCACCUC	402	GAGGUGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUUGCA	7802
1826	GCAACUUU U UCACCUCU	403	AGAGUGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGUUGC	7803
1827	CAACUUUU U CACCUCUG	404	CAGAGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGUUG	7804
1828	AACUUUUU C ACCUCUGC	405	GCAGAGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGUUU	7805
1833	UUUCACCU C UGCCUAAU	406	AUUAGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUGAAA	7806
1839	CUCUGCCU A AUCAUCUC	407	GAGAUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCAGAG	7807
1842	UGCCUAAU C AUCUCAUG	408	CAUGAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAGGCA	7808
1845	CUAAUCAU C UCAUGUUC	409	GAACAUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUUAG	7809
1847	AAUCAUCU C AUGUUCAU	410	AUGAACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUGAUU	7810
1852	UCUCAUGU U CAUGUCCU	411	AGGACAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUGAGA	7811
1853	CUCAUGUU C AUGUCCUA	412	UAGGACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAUAGAG	7812
1858	GUUCAUGU C CUACUGUU	413	AACAGUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUGAAC	7813
1861	CAUGUCCU A CUGUCAA	414	UUGAACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGACAUG	7814
1866	CCUACUGU U CAAGCCUC	415	GAGGCUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGUAGG	7815
1867	CUACUGUU C AAGCCUCC	416	GGAGGCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAGUAG	7816
1874	UCAAGCCU C CAAGCUGU	417	ACAGCUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCUUGA	7817
1887	CUGUGCCU U GGGUGGCU	418	AGCCACCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCACAG	7818
1896	GGGUGGCU U UGGGGCAU	419	AUGCCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCACCC	7819
1897	GGUGGCUU U GGGGCAUG	420	CAUGCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCCACC	7820
1911	AUGGACAU U GACCCGUA	421	UACGGGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCCAU	7821
1919	UGACCCGU A UAAAGAAU	422	AUUCUUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGGUCA	7822
1921	ACCCGUAU A AAGAAUUU	423	AAAUUCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUACGGGU	7823
1928	UAAAGAAU U UGGAGCUU	424	AAGCUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCUUUA	7824
1929	AAAGAAUU U GGAGCUUC	425	GAAGCUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUCUUU	7825
1936	UUGGAGCU U CUGUGGAG	426	CUCCACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCUCCAA	7826
1937	UGGAGCUU C UGUGGAGU	427	ACUCCACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCUCCA	7827
1946	UGUGGAGU U ACUCUCUU	428	AAGAGAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCCACA	7828
1947	GUGGAGUU A CUCUCUUU	429	AAAGAGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACUCCAC	7829
1950	GAGUUACU C UCUUUUUU	430	AAAAAAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAAUCU	7830
1952	GUUACUCU C UUUUUUGC	431	GCAAAAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGUAAAC	7831
1954	UACUCUCU U UUUUGCCU	432	AGGCAAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGAGUA	7832
1955	ACUCUCUU U UUUGCCUU	433	AAGGCAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAGAGU	7833
1956	CUCUCUUU U UUGCCUUC	434	GAAGGCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGAGAG	7834
1957	UCUCUUUU U UGCCUUCU	435	AGAAGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGAGA	7835
1958	CUCUUUUU U GCCUUCUG	436	CAGAAGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGAGAG	7836

1963	UUUUGCCU U CUGACUUC	437	GAAGUCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCAAAA	7837
1964	UUUGCCUU C UGACUUCU	438	AGAAGUCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGCAAA	7838
1970	UUCUGACU U CUUCCUU	439	AAGGAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCAGAA	7839
1971	UCUGACUU C UUUCUUUC	440	GAAGGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUCAGA	7840
1973	UGACUUCU U UCCUUCUA	441	UAGAAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGUCA	7841
1974	GACUUCUU U CCUUCUAU	442	AUAGAAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAAGUC	7842
1975	ACUUCUUU C CUUCUAUU	443	AAUAGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGAAGU	7843
1978	UCUUUCCU U CUAUUCGA	444	UCGAAUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAAAGA	7844
1979	CUUUCCUU C UAUUCGAG	445	CUCGAAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGAAAG	7845
1981	UUCCUUCU A UUCGAGAU	446	AUCUCGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGGAA	7846
1983	CCUUCUAU U CGAGAUCU	447	AGAUCUCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGAAGG	7847
1984	CUUCUAUU C GAGAUCUC	448	GAGAUCUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAGAAG	7848
1990	UUCGAGAU C UCCUCGAC	449	GUCGAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUCGAA	7849
1992	CGAGAUCU C CUCGACAC	450	GUGUCGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUCUCG	7850
1995	GAUCUCCU C GACACCGC	451	GCGGUGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGAUC	7851
2006	CACCGCCU C UGCUCUGU	452	ACAGAGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCGGUG	7852
2011	CCUCUGCU C UGUUUCGG	453	CCGAUACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGAGG	7853
2015	UGCUCUGU A UCGGGGGG	454	CCCCCCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGAGCA	7854
2017	CUCUGUAU C GGGGGGCC	455	GGCCCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUACAGAG	7855
2027	GGGGGCCU U AGAGUCUC	456	GAGACUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCCCC	7856
2028	GGGGCCUU A GAGUCUCC	457	GGAGACUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGCCCC	7857
2033	CUUAGAGU C UCCGGAAC	458	GUUCCGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCUAAG	7858
2035	UAGAGUCU C CGGAACAU	459	AUGUCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACUCUA	7859
2044	CGGAACAU U GUUACCCU	460	AGGUGAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCCCG	7860
2047	AACAUUGU U CACCUCAC	461	GUGAGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAAUUGU	7861
2048	ACAUUGUU C ACCUCACC	462	GGUGAGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAAUGU	7862
2053	GUUACCCU C ACCAUACG	463	CGUAUGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUGAAC	7863
2059	CUCACCAU A CGGCACUC	464	GAGUGCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGUGAG	7864
2067	ACGGCACU C AGGCAAGC	465	GCUUGCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGCCGU	7865
2077	GGCAAGCU A UUCUGUGU	466	ACACAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCUGGCC	7866
2079	CAAGCUAU U CUGUGUUG	467	CAACACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGCUUG	7867
2080	AAGCUAUU C UGUGUUGG	468	CCAACACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAGCUU	7868
2086	UUCUGUGU U GGGUGAG	469	CUCACCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACAGAA	7869
2096	GGGUGAGU U GAUGAAUC	470	GAUUCAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCACCC	7870
2104	UGAUGAAU C UAGCCACC	471	GGUGGCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCAUCA	7871
2106	AUGAAUCU A GCCACCUG	472	CAGGUGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUUCAU	7872
2125	UGGGAAGU A AUUUGGAA	473	UUCCAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUUCCCA	7873
2128	GAAGUAAU U UGGAAGAU	474	AUCUUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUACUUC	7874
2129	AAGUAAU U GGAAGAUC	475	GAUCUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUAUUC	7875
2137	UGGAAGAU C CAGCAUCC	476	GGAUGCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUCCA	7876
2144	UCCAGCAU C CAGGGAU	477	AUUCUCCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCUGGA	7877
2153	CAGGGAU U AGUAGUCA	478	UGACUACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCCUUG	7878
2154	AGGGAAU A GUAGUCAG	479	CUGACUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUCUUC	7879
2157	GAAUAGU A GUCAGCUA	480	UAGCUGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUAAUUC	7880
2160	UUAGUAGU C AGCUAUGU	481	ACAUAGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUACUAA	7881
2165	AGUCAGCU A UGUCAACG	482	CGUUGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCUGACU	7882
2169	AGCUAUGU C AACGUUAA	483	UUAACGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUAGCU	7883
2175	GUCAACGU U AAUAUGGG	484	CCCAUAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGUUGAC	7884
2176	UCAACGUU A AUAUGGGC	485	GCCCAUAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACGUUGA	7885
2179	ACGUUAAU A UGGGCCUA	486	UAGGCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAACGU	7886
2187	AUGGGCCU A AAAAUCAG	487	CUGAUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCCAU	7887

2193	CUAAAAAU C AGACAACU	488	AGUUGUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUUAG	7888
2202	AGACAACU A UUGUGGUU	489	AACCACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUGUCU	7889
2204	ACAACUAA U GUGGUUUC	490	GAAACCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGUUGU	7890
2210	AUUGUGGU U UCACAUUU	491	AAAUGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCACAAU	7891
2211	UUGUGGUU U CACAUUUC	492	GAAUGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCACAA	7892
2212	UGUGGUUU C ACAUUUCC	493	GGAAAUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACCACA	7893
2217	UUUCACAU U UCCUGUCU	494	AGACAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUGAAA	7894
2218	UUCACAUU U CCUGUCUU	495	AAGACAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGUGAA	7895
2219	UCACAUUU C CUGUCUUA	496	UAAGACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAUGUGA	7896
2224	UUUCCUGU C UUACUUUU	497	AAAAGUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGGAAA	7897
2226	UCCUGUCU U ACUUUUGG	498	CCAAAAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACAGGA	7898
2227	CCUGUCUU A CUUUUGGG	499	CCCAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGACAGG	7899
2230	GUCUUACU U UUGGGCGA	500	UCGCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAAAGAC	7900
2231	UCUUACUU U UGGGCGAG	501	CUCGCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUAAGA	7901
2232	CUUACUUU U GGGCGAGA	502	UCUCGCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGUAAAG	7902
2247	GAAACUGU C CUUGAAUA	503	UAUUCAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGUUUC	7903
2248	AAACUGUU C UUGAAUAU	504	AUAUUCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAGUUU	7904
2250	ACUGUUCU U GAAUAUUU	505	AAUAUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAACAGU	7905
2255	UCUUGAAU A UUUGGUGU	506	ACACCAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCAAGA	7906
2257	UUGAAUAU U UGGUGUCU	507	AGACACCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAUUCAA	7907
2258	UGAAUAUU U GGUGUCUU	508	AAGACACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUUCA	7908
2264	UUUGGUGU C UUUUGGAG	509	CUCCAAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACACCAAA	7909
2266	UGGUGUCU U UUGGAGUG	510	CACUCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACACCA	7910
2267	GGUGUCUU U UGGAGUGU	511	ACACUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGACACC	7911
2268	GUGUCUUU U GGAGUGUG	512	CACACUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGACAC	7912
2280	GUGUGGAU U CGCACUCC	513	GGAGUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCACAC	7913
2281	UGUGGAUU C GCACUCCU	514	AGGAGUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUCCACA	7914
2287	UUCGCACU C CUCCUGCA	515	UGCAGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGCGAA	7915
2290	GCACUCCU C CUGCAUAU	516	AUAUGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGUGC	7916
2297	UCCUGCAU A UAGACCAC	517	GUGGUCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCAGGA	7917
2299	CUGCAUAU A GACCACCA	518	UGGUGGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAUGCAG	7918
2317	AUGCCCCU A UCUAUACA	519	UGAUAAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGGCAU	7919
2319	GCCCCUAA C UUAUCAAC	520	GUUGAUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGGGGC	7920
2321	CCCUAUCU U AUCAACAC	521	GUGUUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUAGGG	7921
2322	CCUAUCUU A UCAACACU	522	AGUGUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAUAGG	7922
2324	UAUCUUAU C AACACUUC	523	AGUGUGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAGAUU	7923
2331	UCAACACU U CCGGAAAC	524	GUUUCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGUUGA	7924
2332	CAACACUU C CGGAAACU	525	AGUUUCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUGUUG	7925
2341	CGGAAACU A CUGUUGUU	526	AACAACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUUCCG	7926
2346	ACUACUGU U GUUAGACG	527	CGUCUAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGUAGU	7927
2349	ACUGUUGU U AGACGAAG	528	CUUCGUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAACAGU	7928
2350	CUGUUGUU A GACGAAGA	529	UCUUCGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAACAG	7929
2366	AGGCAGGU C CCCUAGAA	530	UUCUAGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUGCCU	7930
2371	GGUCCCUU A GAAGAAGA	531	UCUUCUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGGACC	7931
2383	GAAGAACU C CCUCGCCU	532	AGGCGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUCUUC	7932
2387	AACUCCCU C GCCUCGCA	533	UGCGAGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGAGUU	7933
2392	CCUCGCCU C GCAGACGA	534	UCGUCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCGAGG	7934
2405	ACGAAGGU C UCAAUCGC	535	GCGAUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUUCGU	7935
2407	GAAGGUCU C AAUCGCCG	536	CGGCGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCUUC	7936
2411	GUCUCAAU C GCCGCGUC	537	GACGCGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGAGAC	7937
2419	CGCCGCGU C GCAGAAGA	538	UCUUCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGCGGCG	7938

2429	CAGAAGAU C UCAAUCUC	539	GAGAUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUUCUG	7939
2431	GAAGAUCU C AAUCUCGG	540	CCGAGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUCUUC	7940
2435	AUCUCAAU C UCGGAAU	541	AUUCCCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGAGAU	7941
2437	CUCAAUUC C GGGAAUCU	542	AGAUUCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUUGAG	7942
2444	UCGGGAAU C UCAAUGUU	543	AACAUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUCCCGA	7943
2446	GGGAAUCU C AAUGUUAG	544	CUAACAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUUCCC	7944
2452	CUCAUGU U AGUAUUC	545	GGAAUACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUUGAG	7945
2453	UCAAUGU A GUAAUCCU	546	AGGAUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAUUGA	7946
2456	AUGUUAGU A UUCUUGG	547	CCAAGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUAAACU	7947
2458	GUUAGUAU U CCUUGGAC	548	GUCCAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUACUAA	7948
2459	UUAGUAU C CUUGGACA	549	UGUCCAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUACUAA	7949
2462	GUAAUCCU U GGACACAU	550	AUGUGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAAUAC	7950
2471	GGACACAU A AGGUGGGA	551	UCCCACCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUGUCC	7951
2484	GGGAAACU U UACGGGGC	552	GCCCCGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUUCCC	7952
2485	GGAAACUU U ACGGGGCU	553	AGCCCCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUUUCC	7953
2486	GAAACUUU A CGGGGCUU	554	AAGCCCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGUUUC	7954
2494	ACGGGGCU U UAUCUUC	555	GAAGAAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCCCCGU	7955
2495	CGGGGCUU U AUUCUUCU	556	AGAAGAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCCCCG	7956
2496	GGGGCUUU A UUCUUCUA	557	UAGAAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGCCCC	7957
2498	GGCUUUAU U CUUCUACG	558	CGUAGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAAGCC	7958
2499	GCUUUAU C UUCUACGG	559	CCGUAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAAAGC	7959
2501	UUUAUUCU U CUACGGUA	560	UACCGUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAUAAA	7960
2502	UUAUUCU C UACGGUAC	561	GUACCGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAAUAA	7961
2504	AUUCUUCU A CGGUACCU	562	AGGUACCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGAAU	7962
2509	UCUACGGU A CCUUGCUU	563	AAGCAAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCGUAGA	7963
2513	CGGUACCU U GCUUUAU	564	AUUAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAAGCG	7964
2517	ACCUUGCU U UAAUCCUA	565	UAGGAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAAGGU	7965
2518	CCUUGCUU U AAUCCUAA	566	UUAGGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGCAAGG	7966
2519	CUUGCUUU A AUCCUAAA	567	UUUAGGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGCAAG	7967
2522	GCUUUAU C CUAAAUGG	568	CCAUUUAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAAAGC	7968
2525	UUAAUCCU A AAUGGCAA	569	UUGCCAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAUUA	7969
2537	GGCAAACU C CUUCUUU	570	AAAAGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUUGCC	7970
2540	AAACUCCU U CUUUCCU	571	AGGAAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGUUU	7971
2541	AACUCCU C UUUUCCUG	572	CAGGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGAGUU	7972
2543	CUCUUCU U UUCUGAC	573	GUCAGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAGGAG	7973
2544	UCCUUCU U UCCUGACA	574	UGUCAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAAGGA	7974
2545	CCUUCUUU U CCUGACAU	575	AUGUCAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGAAGG	7975
2546	CUUCUUU C CUGACAUU	576	AAUGUCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAAGAAG	7976
2554	CCUGACAU U CAUUGCA	577	UGCAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCAGG	7977
2555	CUGACAU C AUUUGCAG	578	CUGCAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGUCAG	7978
2558	ACAUUCAU U UGCAGGAG	579	CUCCUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAAUGU	7979
2559	CAUUCAU U GCAGGAGG	580	CCUCCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGAUG	7980
2572	GAGGACAU U GUUGAUAG	581	CUAUCAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCCUC	7981
2575	GACAUUGU U GAUAGAUG	582	CAUCUAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUGUC	7982
2579	UUGUUGAU A GAUGAAG	583	CUUACAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCAACAA	7983
2585	AUAGAUGU A AGCAAUUU	584	AAAUUGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUCUAU	7984
2592	UAAGCAAU U UGUGGGGC	585	GCCCCACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGCUUA	7985
2593	AAGCAAU U GUGGGGCC	586	GGCCCCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUGCUU	7986
2605	GGGCCCCU U ACAGUAAA	587	UUUACUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGGCC	7987
2606	GGCCCCU A CAGUAAU	588	AUUUACUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGGGCC	7988
2611	CUUACAGU A AAUGAAAA	589	UUUUCAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGUAAG	7989

2629	AGGAGACU U AAAUUAAC	590	GUUAAUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUCUCCU	7990
2630	GGAGACUU A AAUUAACU	591	AGUUAUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUCUCC	7991
2634	ACUUAUUU U AACUAUGC	592	GCAUAGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUAAAG	7992
2635	CUUAAUUU A ACUAUGCC	593	GGCAUAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUUUAAG	7993
2639	AAUUAACU A UGCCUGCU	594	AGCAGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUAUUU	7994
2648	UGCCUGCU A GGUUUUAU	595	AUAAAACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCAGGCA	7995
2652	UGCUGAGU U UUAUCCCA	596	UGGGAUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUAGCA	7996
2653	GCUGAGUU U UAUCCCAA	597	UUGGGAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCUAGC	7997
2654	CUAGGUUU U AUCCCAAU	598	AUUGGGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAACCUAG	7998
2655	UAGGUUUU A UCCCAAUG	599	CAUUGGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAACCUA	7999
2657	GGUUUUUU C CCAUUGUU	600	AACAUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAAACC	8000
2665	CCCAAUGU U ACUAAUAU	601	UAUUUAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUUGGG	8001
2666	CCAAUGUU A CUAAUAUU	602	AUAUUUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACAUUGG	8002
2669	AUGUUACU A AAUAUUUG	603	CAAAUAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAACAU	8003
2673	UACUAAAU A UUUGCCCU	604	AGGGCAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUAGUA	8004
2675	CUAAUAUU U UGCCCUUA	605	UAAGGGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUUUAG	8005
2676	UAAUAUUU U GCCCUUAG	606	CUAAGGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUUUA	8006
2682	UUUGCCCU U AGAUAAG	607	CUUUUUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGCAAA	8007
2683	UUGCCCUU A GAUAAAGG	608	CCUUUAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGGGCAA	8008
2687	CCUUAAGU A AAGGGAUC	609	GAUCCCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUAAGG	8009
2695	AAAGGGAU C AAACCGUA	610	UACGGUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCCUUU	8010
2703	CAAACCGU A UUAUCCAG	611	CUGGAUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGGUUUG	8011
2705	AACCGUAU U AUCCAGAG	612	CUCUGGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUACGGUU	8012
2706	ACCGUAUU A UCCAGAGU	613	ACUCUGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUACGGU	8013
2708	CGUAUUUU C CAGAGUAU	614	AUACUCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAUACG	8014
2715	UCCAGAGU A UGUAGUUA	615	UAACUACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCUGGA	8015
2719	GAGUAUGU A GUUAAUCA	616	UGAUUAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAUACUC	8016
2722	UAUGUAGU U AAUCAUUA	617	UAAUGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUACAUU	8017
2723	AUGUAGUU A AUCAUUAU	618	GUAAUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACUACAU	8018
2726	UAGUUAUU C AUUAUUC	619	GAAGUAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAACUA	8019
2729	UUAUUAUU U ACUCCAG	620	CUGGAAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUUAA	8020
2730	UAAUUAUU A CUUCCAGA	621	UCUGGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGAUUA	8021
2733	UCAUUAUU U CCAGACGC	622	GCGUCUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAAUGA	8022
2734	CAUUAUUU C CAGACGCG	623	CGCGUCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGUAAUG	8023
2747	CGCGACAU U AUUACAC	624	GUGUAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGUCGCG	8024
2748	GCGACAUU A UUUACACA	625	UGUGUAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGUCGC	8025
2750	GACAUUAU U UACACACU	626	AGUGUGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAAUGUC	8026
2751	ACAUUAUU U ACACACUC	627	GAGUGUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUUGU	8027
2752	CAUUAUUU A CACACUCU	628	AGAGUGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUUGU	8028
2759	UACACACU C UUUGGAAG	629	CUUCCAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUGUGUA	8029
2761	CACACUCU U UGGAAGGC	630	GCCUCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAGUGUG	8030
2762	ACACUCUU U GGAAGGCG	631	CGCCUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAGUGU	8031
2776	GCGGGGAU C UUAUAUAA	632	UUUAUAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCCCGC	8032
2778	GGGGAUCU U AUUAUAAA	633	UUUUUAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUCCCC	8033
2779	GGGAUCUU A UUAUAAAAG	634	CUUUUAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAUCCC	8034
2781	GAUCUUAU A UAAAAGAG	635	CUCUUUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAGAUC	8035
2783	UCUUAUAU A AAAGAGAG	636	CUCUCUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUAAGA	8036
2793	AAGAGAGU C CACACGUA	637	UACGUGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUCUCUU	8037
2801	CCACACGU A GCGCCUCA	638	UGAGGCGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACGUGUGG	8038
2808	UAGCGCCU C AUUUUGCG	639	CGCAAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCGCUA	8039
2811	CGCCUCAU U UUGCGGGU	640	ACCCGCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAGGCG	8040

2812	GCCUCAUU U UGCGGGUC	641	GACCCGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGAGGC	8041
2813	CCUCAUUU U GCGGGUCA	642	UGACCCGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAUGAGG	8042
2820	UUGCGGGU C ACCAUUU	643	AAUAUGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCCGCAA	8043
2826	GUCACCAU A UUCUUGG	644	CCCAAGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGGUGAC	8044
2828	CACCAUAU U CUUGGAA	645	UUCCCAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUAUGGUG	8045
2829	ACCAUAUU C UUGGGAAC	646	GUUCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUAUGGU	8046
2831	CAUAUUCU U GGGAACAA	647	UUGUCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAUAUG	8047
2843	AACAAGAU C UACAGCAU	648	AUGCUGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUUGUJ	8048
2845	CAAGAUCU A CAGCAUGG	649	CCAUGCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUCUUG	8049
2859	UGGGAGGU U GGUCUUC	650	GGAAGACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCUCCCA	8050
2863	AGGUUGGU C UUCCAAAC	651	GUUUGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCAACCU	8051
2865	GUUGGUCU U CCAAACCU	652	AGGUUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGACCAAC	8052
2866	UUGGUCUU C CAAACCUC	653	GAGGUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGACCAA	8053
2874	CCAAACCU C GAAAAGGC	654	GCCUUUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUUUGG	8054
2895	GGACAAAU C UUUCUGUC	655	GACAGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUGUCC	8055
2897	ACAAUCU U UCUGUCCC	656	GGGACAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAUUUGU	8056
2898	CAAUCUU U CUGUCCCC	657	GGGGACAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAUUUG	8057
2899	AAAUUUU C UGUCCCCA	658	UGGGGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAAGAUUU	8058
2903	CUUUCUGU C CCCAUUC	659	GGAUUGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGAAAG	8059
2910	UCCCCAAU C CCCUGGGA	660	UCCCAGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGGGGA	8060
2920	CCUGGGAU U CUUCCCCG	661	CGGGGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCCAGG	8061
2921	CUGGGAUU C UUCCCCGA	662	UCGGGGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUCCCAG	8062
2923	GGGAUUCU U CCCGAUC	663	GAUCGGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGAAUCCC	8063
2924	GGAUUCUU C CCCGAUCA	664	UGAUCGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAGAAUCC	8064
2931	UCCCCGAU C AUCAGUUG	665	CAACUGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCCGGGA	8065
2934	CCGAUCAU C AGUUGGAC	666	GUCCAACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGAUCGG	8066
2938	UCAUCAGU U GGACCCUG	667	CAGGGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGAUGA	8067
2950	CCCUGCAU U CAAAGCCA	668	UGGCUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCAGGG	8068
2951	CCUGCAUU C AAAGCCAA	669	UUGGCUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGCAGG	8069
2962	AGCCAACU C AGUAAAUC	670	GAUUUACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUUGGCU	8070
2966	AACUCAGU A AAUCCAGA	671	UCUGGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGAGUU	8071
2970	CAGUAAAU C CAGAUUGG	672	CCAUUCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUUACUG	8072
2976	AUCCAGAU U GGGACCUC	673	GAGGUCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUCUGGAU	8073
2984	UGGGACCU C AACCCGCA	674	UGCGGGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGUCCCA	8074
3037	GGGAGCAU U CGGGCCAG	675	CUGGCCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUGCUCCC	8075
3038	GGAGCAUU C GGGCCAGG	676	CCUGGCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AAUGCUCU	8076
3049	GCCAGGGU U CACCCUC	677	GAGGGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACCCUGGC	8077
3050	CCAGGGUU C ACCCCUCC	678	GGAGGGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AACCCUGG	8078
3057	UCACCCCU C CCCAUGGG	679	CCCAUGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGGUGA	8079
3073	GGGACUGU U GGGGUGGA	680	UCCACCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACAGUCCC	8080
3087	GGAGCCCU C ACGCUCAG	681	CUGAGCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGGCUCC	8081
3093	CUCACGCU C AGGGCCUA	682	UAGGCCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCGUGAG	8082
3101	CAGGGCCU A CUCACAAC	683	GUUGUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCCUG	8083
3104	GGCCUACU C ACAACUGU	684	ACAGUUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGUAGGCC	8084
3123	CAGCAGCU C CUCCUCCU	685	AGGAGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGCUGCUG	8085
3126	CAGCUCCU C CUCCUGCC	686	GGCAGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGCUG	8086
3129	CUCCUCCU C CUGCCUCC	687	GGAGGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGAGGAG	8087
3136	UCCUGCCU C CACCAAUC	688	GAUUGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCAGGA	8088
3144	CCACCAAU C GGCAUGCA	689	UGACUGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AUUGGUGG	8089
3151	UCGGCAGU C AGGAAGGC	690	GCCUUCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ACUGCCGA	8090
3165	GGCAGCCU A CUCCCUUA	691	UAAGGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA AGGCUGCC	8091

3168	AGCCUACU C CCUUAUCU	692	AGAUAAAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUAGGCU	8092
3172	UACUCCCU U AUCUCCAC	693	GUGGAGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGGAGUA	8093
3173	ACUCCCUU A UCUCACC	694	GGUGGAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AAGGGAGU	8094
3175	UCCCUUAAU C UCCACCUC	695	GAGGUGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUAAGGGA	8095
3177	CCUUAUCU C CACCUCUA	696	UAGAGGUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAUAAAGG	8096
3183	CUCCACCU C UAAGGGAC	697	GUCCCUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGUGGAG	8097
3185	CCACCUCU A AGGGACAC	698	GUGUCCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGAGGUGG	8098
3195	GGGACACU C AUCCUCAG	699	CUGAGGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGUGUCCC	8099
3198	ACACUCAU C CUCAGGCC	700	GGCCUGAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA AUGAGUGU	8100
3201	CUCAUCCU C AGGCCAUG	701	CAUGGCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA AGGAUGAG	8101

Input Sequence = AF100308. Cut Site = UH/.

Stem Length = 8 . Core Sequence = CUGAUGAG GCCGUUAGGC CGAA

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

Underlined region can be any X sequence or linker, as described herein.



TABLE VI: HUMAN HBV INOZYME AND SUBSTRATE SEQUENCE

Pos	Substrate	Seq ID	Inozyme	Seq ID
9	AACUCCAC C ACUUUCCA	702	UGGAAAGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUGAGUU	8102
10	ACUCCACC A CUUCCAC	703	GUGGAAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUGGAGU	8103
12	UCCACCAC U UUCCACCA	704	UGGUGGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUGUGGA	8104
16	CCACUUUC C ACCAAACU	705	AGUUUGGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAAGUGG	8105
17	CACUUUC A CCAAACUC	706	GAGUUUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAAAGUG	8106
19	CUUCCAC C AAACUCUU	707	AAGAGUUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUGAAAG	8107
20	UUUCCACC A AACUCUUC	708	GAAGAGUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUGGAAA	8108
24	CACCAAAC U CUUCAAGA	709	UCUUGAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUUGGUG	8109
26	CCAAACUC U UCAAGAUC	710	GAUCUUGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUUUGG	8110
29	AACUCUUC A AGAUCCCA	711	UGGGAUCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAGAGUU	8111
35	UCAAGAUC C CAGAGUCA	712	UGACUCUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUUGA	8112
36	CAAGAUC C AGAGUCAG	713	CUGACUCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAUCUUG	8113
37	AAGAUC C A GAGUCAGG	714	CCUGACUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGAUUU	8114
43	CCAGAGUC A GGGCCUG	715	CAGGGCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IACUCUGG	8115
48	GUCAGGGC C CUGUACUU	716	AAGUACAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCUCGAC	8116
49	UCAGGGCC C UGUACUUU	717	AAAGUACA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCCUGA	8117
50	CAGGGCCC U GUACUUUC	718	GAAAGUAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGCCUG	8118
55	CCCUGUAC U UUCCUGCU	719	AGCAGGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUACAGGG	8119
59	GUACUUUC C UGCUGGUG	720	CACCAGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAAGUAC	8120
60	UACUUUC U GCUGGUGG	721	CCACCAGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAAAGUA	8121
63	UUUCCUGC U GGUGGCUC	722	GAGCCACC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAGGAAA	8122
70	CUGGUGGC U CCAGUUCA	723	UGAACUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCACCAG	8123
72	GGUGGCUC C AGUUCAGG	724	CCUGAACU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGCCACC	8124
73	GUGGCUC C A GUUCAGGA	725	UCCUGAAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGCCAC	8125
78	UCCAGUUC A GGAACAGU	726	ACUGUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAACUGGA	8126
84	UCAGGAAC A GUGAGCCC	727	GGGCUCAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUCCUGA	8127
91	CAGUGAGC C CUGCUCAG	728	CUGAGCAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICUCACUG	8128
92	AGUGAGCC C UGCUCAGA	729	UCUGAGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCUCACU	8129
93	GUGAGCCC U GCUCAGAA	730	UUCUGAGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGCUCAC	8130
96	AGCCUGC U CAGAAUAC	731	GUAAUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAGGGCU	8131
98	CCUGCUC A GAAUACUG	732	CAGUAAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGCAGGG	8132
105	CAGAAUAC U GUCUCUGC	733	GCAGAGAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUAAUUCUG	8133
109	AUACUGUC U CUGCAUA	734	UAUGGCAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IACAGUAU	8134
111	ACUGUCUC U GCCAUAC	735	GAUAGGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGACAGU	8135
114	GUCUCUGC C AUAUCGUC	736	GACGAUAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAGAGAC	8136
115	UCUGUGCC A UAUCGUCA	737	UGACGAUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCAGAGA	8137
123	AUAUCGUC A AUCUUAUC	738	GAUAAGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IACGAUAU	8138
127	CGUCAAUC U UAUCGAAG	739	CUUCGAUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUGACG	8139
138	UCGAAGAC U GGGGACCC	740	GGGUCCCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCUUCGA	8140
145	CUGGGGAC C CUGUACCG	741	CGGUACAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCCCCAG	8141
146	UGGGGACC C UGUACCGA	742	UCGGUACA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUCCCCA	8142
147	GGGGACCC U GUACCGAA	743	UUCGGUAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGUCCCC	8143
152	CCCUGUAC C GAACAUGG	744	CCAUGUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUACAGGG	8144
157	UACCGAAC A UGGAGAAC	745	GUUCUCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUCGGUA	8145
166	UGGAGAAC A UCGCAUCA	746	UGAUGCGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUCUCCA	8146
171	AACAUCGC A UCAGGACU	747	AGUCCUGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICGAUGUU	8147

174	AUCGCAUC A GGACUCCU	748	AGGAGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAUGCGAU	8148
179	AUCAGGAC U CCUAGGAC	749	GUCCUAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCCUGAU	8149
181	CAGGACUC C UAGGACCC	750	GGGUCCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGUCCUG	8150
182	AGGACUCC U AGGACCCC	751	GGGGUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGAGUCCU	8151
188	CCUAGGAC C CCUGCUCG	752	CGAGCAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCCUAGG	8152
189	CUAGGACC C CUGCUCGU	753	ACGAGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGUCCUAG	8153
190	UAGGACCC C UGCUCGUG	754	CACGAGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGGUCCUA	8154
191	AGGACCCC U GCUCGUGU	755	ACACGAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGGGUCCU	8155
194	ACCCCGUC U CGUGUAC	756	GUAACACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	ICAGGGGU	8156
203	CGUGUAC A GGCGGGGU	757	ACCCCGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUAACACG	8157
217	GGUUUUC U UGUUGACA	758	UGUCAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAAAAACC	8158
225	UUGUUGAC A AAAAUCCU	759	AGGAUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCAACAA	8159
232	CAAAAUC C UCACAAUA	760	UAUUGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAUUUUUG	8160
233	AAAAAUCC U CACAAUAC	761	GUUUGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGAUUUUU	8161
235	AAAUCCUC A CAAUACCA	762	UGUUAUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGGAUUU	8162
237	AUCCUCAC A AUACCACA	763	UGUGGUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUGAGGAU	8163
242	CACAAUAC C ACAGAGUC	764	GACUCUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUAUUGUG	8164
243	ACAAUACC A CAGAGUCU	765	AGACUCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGUAUUGU	8165
245	AAUACCAC A GAGUCUAG	766	CUAGACUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUGGUUUU	8166
251	ACAGAGUC U AGACUCGU	767	ACGAGUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACUCUGU	8167
256	GUCUAGAC U CGUGGUGG	768	CCACCACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCUAGAC	8168
267	UGGUGGAC U UCUCUCAA	769	UUGAGAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCCACCA	8169
270	UGGACUUC U CUCAAUUU	770	AAAUUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAAGUCCA	8170
272	GACUUCUC U CAAUUUUC	771	GAAAAUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGAAGUC	8171
274	CUUCUCUC A AUUUUCUA	772	UAGAAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGAGAAG	8172
281	CAAUUUUC U AGGGGGAA	773	UUCCCCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAAAAUUG	8173
291	GGGGGAAC A CCCGUGUG	774	CACACGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUCCCCC	8174
293	GGGAACAC C CGUGUGUC	775	GACACACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUGUUCCC	8175
294	GGAACACC C GUGUGUCU	776	AGACACAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGUGUCCC	8176
302	CGUGUGUC U UGGCCAAA	777	UUUGGCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACACACG	8177
307	GUCUUGGC C AAAAUUCG	778	CGAAUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	ICCAAGAC	8178
308	UCUUGGCC A AAUUCGC	779	GCGAAUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGCCAAGA	8179
317	AAAUUCGC A GUCCAAA	780	UUUGGGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	ICGAAUUU	8180
321	UCGCAGUC C CAAAUUCU	781	GAGAUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACUGCGA	8181
322	CGCAGUCC C AAUUCUCC	782	GGAGAUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGACUGCG	8182
323	GCAGUCCC A AAUUCUCA	783	UGGAGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGGACUGC	8183
328	CCCAAUUC U CCAGUCAC	784	GUGACUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAUUUGGG	8184
330	CAAUUCUC C AGUCACUC	785	GAGUGACU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGAUUUG	8185
331	AAAUUCUC A GUCACUCA	786	UGAGUGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGAGAUUU	8186
335	CUCCAGUC A CUCACCAA	787	UUGGUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACUGGAG	8187
337	CCAGUCAC U CACCAACC	788	GGUUGGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUGACUGG	8188
339	AGUCACUC A CCAACCU	789	CAGGUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGUGACU	8189
341	UCACUCAC C AACCUGUU	790	AACAGGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUGAGUGA	8190
342	CACUCACC A ACCUGUUG	791	CAACAGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGUGAGUG	8191
345	UCACCAAC C UGUUGUCC	792	GGACAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IUUGGUGA	8192
346	CACCAACC U GUUGUCCU	793	AGGACAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGUUGGUG	8193
353	CUGUUGUC C UCCAAUUU	794	AAAUUGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACAACAG	8194
354	UGUUGUCC U CCAAUUUG	795	CAAAUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGACAACA	8195
356	UUGUCCUC C AAUUGUC	796	GACAAAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IAGGACAA	8196
357	UGUCCUCC A AUUUGUCC	797	GGACAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IGAGGACA	8197
365	AAUUGUC C UGUUAUC	798	GAUAACCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA	IACAAAUU	8198

366	AUUUGUCC U GGUUAUCG	799	CGAUAACC CUGAUGAG	GCCGUUAGGC	CGAA IGACAAAU	8199
376	GUUAUCGC U GGAUGUGU	800	ACACAUC CUGAUGAG	GCCGUUAGGC	CGAA ICGAUAAC	8200
386	GAUGUGUC U GCGGCGUU	801	AACGCGC CUGAUGAG	GCCGUUAGGC	CGAA IACACAUC	8201
400	GUUUUAUC A UCUUCCUC	802	GAGGAAGA CUGAUGAG	GCCGUUAGGC	CGAA IAUAAAAC	8202
403	UUAUCAUC U UCCUCUGC	803	GCAGAGGA CUGAUGAG	GCCGUUAGGC	CGAA IAUGAUAA	8203
406	UCAUCUUC C UCUGCAUC	804	GAUGCAGA CUGAUGAG	GCCGUUAGGC	CGAA IAAGAUGA	8204
407	CAUCUUC U CUGCAUC	805	GGAUGCAG CUGAUGAG	GCCGUUAGGC	CGAA IGAAGAUG	8205
409	UCUUCUC U GCAUCCUG	806	CAGGAUGC CUGAUGAG	GCCGUUAGGC	CGAA IAGGAAGA	8206
412	UCCUCUGC A UCCUGCUG	807	CAGCAGGA CUGAUGAG	GCCGUUAGGC	CGAA ICAGAGGA	8207
415	UCUGCAUC C UGCUGCUA	808	UAGCAGCA CUGAUGAG	GCCGUUAGGC	CGAA IAUGCAGA	8208
416	CUGCAUC U GCUGCUAU	809	AUAGCAGC CUGAUGAG	GCCGUUAGGC	CGAA IGAUGCAG	8209
419	CAUCCUGC U GCUAUGCC	810	GGCAUAGC CUGAUGAG	GCCGUUAGGC	CGAA ICAGGAUG	8210
422	CCUGCUGC U AUGCCUCA	811	UGAGGCAU CUGAUGAG	GCCGUUAGGC	CGAA ICAGCAGG	8211
427	UGCUAUGC C UCAUCUUC	812	GAAGAUGA CUGAUGAG	GCCGUUAGGC	CGAA ICAUAGCA	8212
428	GCUAUGCC U CAUCUUCU	813	AGAAGAUG CUGAUGAG	GCCGUUAGGC	CGAA IGCAUAGC	8213
430	UAUGCCUC A UCUCUUG	814	CAAGAAGA CUGAUGAG	GCCGUUAGGC	CGAA IAGGCAUA	8214
433	GCCUCAUC U UCUGUUG	815	CAACAAGA CUGAUGAG	GCCGUUAGGC	CGAA IAUAGGCC	8215
436	UCAUCUUC U UGUUGGUU	816	AACCAACA CUGAUGAG	GCCGUUAGGC	CGAA IAAGAUGA	8216
446	GUUGGUUC U UCUGGACU	817	AGUCCAGA CUGAUGAG	GCCGUUAGGC	CGAA IAACCAAC	8217
449	GGUUCUUC U GGACUAUC	818	GAUAGUCC CUGAUGAG	GCCGUUAGGC	CGAA IAAGAAC	8218
454	UUCUGGAC U AUCAAGGU	819	ACCUUGAU CUGAUGAG	GCCGUUAGGC	CGAA IUCCAGAA	8219
458	GGACUAUC A AGGUAUGU	820	ACAUACCU CUGAUGAG	GCCGUUAGGC	CGAA IAUAGUCC	8220
470	UAUGUUGC C CGUUGUC	821	GACAAACG CUGAUGAG	GCCGUUAGGC	CGAA ICAACAU	8221
471	AUGUUGCC C GUUUGUC	822	GGACAAAC CUGAUGAG	GCCGUUAGGC	CGAA IGCAACAU	8222
479	CGUUGUC C UCUAUUC	823	GAAUAGA CUGAUGAG	GCCGUUAGGC	CGAA IACAAACG	8223
480	GUUUGUC U CUAAUUC	824	GGAAUAG CUGAUGAG	GCCGUUAGGC	CGAA IGACAAAC	8224
482	UUGUCCUC U AAUCCAG	825	CUGGAAU CUGAUGAG	GCCGUUAGGC	CGAA IAGGACAA	8225
488	UCUAUUC C AGGAUCAU	826	AUGAUCCU CUGAUGAG	GCCGUUAGGC	CGAA IAAUAGA	8226
489	CUAAUUC A GGAUCAUC	827	GAUGAUCC CUGAUGAG	GCCGUUAGGC	CGAA IGAUUAG	8227
495	CCAGGAUC A UCAACAAC	828	GUUGUUGA CUGAUGAG	GCCGUUAGGC	CGAA IAUCCUGG	8228
498	GGAUCAUC A ACAACCAG	829	CUGGUUGU CUGAUGAG	GCCGUUAGGC	CGAA IAUAGUCC	8229
501	UCAUCAAC A ACCAGCAC	830	GUGCUGGU CUGAUGAG	GCCGUUAGGC	CGAA IUUGAUGA	8230
504	UCAACAAC C AGCACCAG	831	CCGGUGCU CUGAUGAG	GCCGUUAGGC	CGAA IUUGUUGA	8231
505	CAACAACC A GCACCGGA	832	UCCGGUGC CUGAUGAG	GCCGUUAGGC	CGAA IGUUGUUG	8232
508	CAACCAGC A CCGGACCA	833	UGGUCCGG CUGAUGAG	GCCGUUAGGC	CGAA ICUGGUUG	8233
510	ACCAGCAC C GGACCAUG	834	CAUGGUCC CUGAUGAG	GCCGUUAGGC	CGAA IUGCUGGU	8234
515	CACCGGAC C AUGCAAAA	835	UUUUGCAU CUGAUGAG	GCCGUUAGGC	CGAA IUCCGGU	8235
516	ACCGGACC A UGCAAAAC	836	GUUUGCA CUGAUGAG	GCCGUUAGGC	CGAA IGUCCGGU	8236
520	GACCAUGC A AAACUGC	837	GCAGGUU CUGAUGAG	GCCGUUAGGC	CGAA ICAUGGUC	8237
525	UGCAAAAC C UGCACAAC	838	GUUGUGCA CUGAUGAG	GCCGUUAGGC	CGAA IUUUUGCA	8238
526	GCAAAACC U GCACAACU	839	AGUUGUGC CUGAUGAG	GCCGUUAGGC	CGAA IGUUUUGC	8239
529	AAACUGC A CAACUCCU	840	AGGAGUUG CUGAUGAG	GCCGUUAGGC	CGAA ICAGGUU	8240
531	ACCUGCAC A ACUCCUGC	841	GCAGGAGU CUGAUGAG	GCCGUUAGGC	CGAA IUGCAGGU	8241
534	UGCACAAC U CCUGCUCA	842	UGAGCAGG CUGAUGAG	GCCGUUAGGC	CGAA IUUGUGCA	8242
536	CACAACUC C UGCUCAAG	843	CUUGAGCA CUGAUGAG	GCCGUUAGGC	CGAA IAGUUGUG	8243
537	ACAACUCC U GCUCAAGG	844	CCUUGAGC CUGAUGAG	GCCGUUAGGC	CGAA IGAGUUGU	8244
540	ACUCCUGC U CAAGGAAC	845	GUUCCUUG CUGAUGAG	GCCGUUAGGC	CGAA ICAGGAGU	8245
542	UCCUGCUC A AGGAACCU	846	AGGUUCCU CUGAUGAG	GCCGUUAGGC	CGAA IAGCAGGA	8246
549	CAAGGAAC C UCUAUGUU	847	AACAUAGA CUGAUGAG	GCCGUUAGGC	CGAA IUUCCUUG	8247
550	AAGGAACC U CUAUGUUU	848	AAACAUAG CUGAUGAG	GCCGUUAGGC	CGAA IGUCCUUG	8248
552	GGAACCUC U AUGUUUCC	849	GGAAACAU CUGAUGAG	GCCGUUAGGC	CGAA IAGGUUCC	8249

560	UAUGUUUC C CUCAUGUU	850	AACAUGAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAACAU	8250
561	AUGUUUCC C UCAUGUUG	851	CAACAUGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGAAACAU	8251
562	UGUUUCCC U CAUGUUGC	852	GCAACAUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGAAACA	8252
564	UUUCCUC A UGUUGCUG	853	CAGCAACA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGGGAAA	8253
571	CAUGUUGC U GUACAAA	854	UUUUGUAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAACAUG	8254
576	UGCUGUAC A AAACCUAC	855	GUAGGUU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUACAGCA	8255
581	UACAAAAC C UACGGACG	856	CGUCCGUA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUUUGUA	8256
582	ACAAAACC U ACGGACGG	857	CCGUCCGU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUUUUGU	8257
595	ACGGAAAC U GCACCUGU	858	ACAGGUGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUUCCGU	8258
598	GAAACUGC A CCUGUAUU	859	AAUACAGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAGUUUC	8259
600	AACUGCAC C UGUUUUCC	860	GGAAUACA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUCAGUU	8260
601	ACUGCACC U GUUUUCCC	861	GGGAUAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUGCAGU	8261
608	CUGUAUUC C CAUCCCAU	862	AUGGGAUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAUACAG	8262
609	UGUAUUC C AUCCCAUC	863	GAUGGGAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGAAUACA	8263
610	GUUUUCCC A UCCCAUCA	864	UGAUGGGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGAAUAC	8264
613	IUCCCAUC C CAUCAUCU	865	AGAUGAUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAUUGGAA	8265
614	UCCCAUCC C AUCAUCUU	866	AAGAUGAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGAUGGGA	8266
615	CCCAUCCC A UCAUCUUG	867	CAAGAUGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGAUGGG	8267
618	AUCCCAUC A UCUGGGC	868	GCCCAAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAUUGGAU	8268
621	CCAUCAUC U UGGGCUUU	869	AAAGCCCA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAUGAUGG	8269
627	UCUUGGGC U UUCGCAA	870	UUUGCGAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCCAAGA	8270
633	GUUUUCGC A AAUACC	871	AGGUUUU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGAAAGC	8271
640	CAAAUAC C UAUGGGAG	872	CUCCCAUA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUUUUUG	8272
641	AAAAUACC U AUGGGAGU	873	ACUCCCAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUAUUUU	8273
654	GAGUGGGC C UCAGUCCG	874	CGGACUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCACUC	8274
655	AGUGGGCC U CAGUCCGU	875	ACGGACUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGCCCACTU	8275
657	UGGGCCUC A GUCCGUUU	876	AAACGGAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGGCCCA	8276
661	CCUCAGUC C GUUUCUCU	877	AGAGAAAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACUGAGG	8277
667	UCCGUUUC U CUUGGCUC	878	GAGCCAAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAACGGA	8278
669	CGUUUCUC U UGGCUCAG	879	CUGAGCCA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGAAACG	8279
674	CUCUUGGC U CAGUUUAC	880	GUAAACUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCAAGAG	8280
676	CUUGGCUC A GUUUACUA	881	UAGUAAAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGCCAAG	8281
683	CAGUUUAC U AGUGCCAU	882	AUGGCACU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUAAACUG	8282
689	ACUAGUGC C AUUUGUUC	883	GAACAAAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICACUAGU	8283
690	CUAGUGCC A UUUGUUCA	884	UGAACAAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGCACUAG	8284
698	AUUUGUUC A GUGGUUCG	885	CGAACCAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAACAAAU	8285
713	CGUAGGGC U UUCCCCCA	886	UGGGGGAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCCUACG	8286
717	GGGUUUUC C CCCACUGU	887	ACAGUGGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAAGCCC	8287
718	GGCUUUC C CCACUGUC	888	GACAGUGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGAAAGCC	8288
719	GUUUUCCC C CACUGUCU	889	AGACAGUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGAAAGC	8289
720	CUUUUCCC C ACUGUCUG	890	CAGACAGU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGGAAAG	8290
721	UUUUUCCC A CUGUCUGG	891	CCAGACAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGGGAAA	8291
723	UCCCCCAC U GUCUGGCU	892	AGCCAGAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUGGGGA	8292
727	CCACUGUC U GGUUUUCA	893	UGAAAGCC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACAGUGG	8293
731	UGUCUGGC U UUCAGUUA	894	UACUGAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCAGACA	8294
735	UGGCUUUC A GUUAUAUG	895	CAUAUAAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAAGCCA	8295
764	UUGGGGGC C AAGUCUGU	896	ACAGACUU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICCCCCAA	8296
765	UGGGGGCC A AGUCUGUA	897	UACAGACU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGCCCCCA	8297
770	GCCAAGUC U GUACAACA	898	UGUUGUAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACUUGGC	8298
775	GUCUGUAC A ACAUCUUG	899	CAAGAUU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUACAGAC	8299
778	UGUACAAC A UCUGAGU	900	ACUCAAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUGUACA	8300

781	ACAACAUC U UGAGUCCC	901	GGGACUCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUGUUGU	8301
788	CUUGAGUC C CUUUAUGC	902	GCAUAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACUCAAG	8302
789	UUGAGUCC C UUUUAUGC	903	GGCAUAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGACUCA	8303
790	UGAGUCCC U UUAUGCCG	904	CGGCAUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGACUCA	8304
797	CUUUAUGC C GCUGUUAC	905	GUAACAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUAAAG	8305
800	UAUGCCGC U GUUACCAA	906	UUGGUAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGCAUA	8306
806	GCUGUUAC C AAUUUUCU	907	AGAAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAACAGC	8307
807	CUGUUACC A AUUUUCUU	908	AAGAAAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUAACAG	8308
814	CAAUUUUC U UUGUCUU	909	AAGACAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAAAUUG	8309
821	CUUUUGUC U UUGGGUUAU	910	AUACCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAAAAG	8310
832	GGGUUAUC A UUUAAACC	911	GGUUUAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUAUACCC	8311
840	AUUUAAAC C CUCACAAA	912	UUUGUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUAAA	8312
841	UUUAAACC C UCACAAA	913	UUUUGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUUUAAA	8313
842	UUAAACCC U CACAAAAC	914	GUUUUGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGUUUAA	8314
844	AAACCCUC A CAAAACAA	915	UUGUUUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGUUU	8315
846	ACCCUCAC A AAACAAA	916	UUUUGUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAGGGU	8316
851	CACAAAAC A AAAAGAUG	917	CAUCUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUUGUG	8317
869	GGAUUUUC C CUUAACUU	918	AAGUUUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAUAUCC	8318
870	GAUAUUCC C UUAACUUC	919	GAAGUUAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAUAUUC	8319
871	AUAUUCCC U UAACUUC	920	UGAAGUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGAUAU	8320
876	CCCUUAA C U UCAUGGGA	921	UCCCAUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUAAGGG	8321
879	UUAACUUC A UGGGAUAU	922	AUAUCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAGUUA	8322
906	GUUGGGGC A CAUUGCCA	923	UGGCAAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCCAAC	8323
908	UGGGGCAC A UUGCCACA	924	UGUGGCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGCCCCA	8324
913	CACAUUGC C ACAGGAAC	925	GUUCCUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAAUGUG	8325
914	ACAUUGCC A CAGGAACA	926	UGUCCUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCAAUGU	8326
916	AUUGCCAC A GGAACAU	927	UAUGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGGCAU	8327
922	ACAGGAAC A UAUUGUAC	928	GUACAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUCCUGU	8328
931	UAUUGUAC A AAAAUCA	929	UGAUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUACAUA	8329
939	AAAAAUUC A AAUUGUGU	930	ACACAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUUUU	8330
958	UAGGAAAC U UCCUGUAA	931	UUACAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUCCUA	8331
961	GAAACUUC C UGUAAACA	932	UGUUUACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAGUUUC	8332
962	AAACUUC C UGUAAACAG	933	CUGUUUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAAGUUU	8333
969	CUGUAAAC A GGCCUAU	934	AAUAGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUACAG	8334
973	AAACAGGC C UAUUGAU	935	AAUCAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUGUUU	8335
974	AACAGGCC U AUUGAUUG	936	CAAUCAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCCUGUU	8336
994	AGUAUGUC A ACGAAUUG	937	CAAUUCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAUACU	8337
1009	UGUGGGUC U UUUGGGU	938	ACCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACCCACA	8338
1022	GGGUUUGC C GCCCUUU	939	AAAGGGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAAACCC	8339
1025	UUUGCCGC C CCUUCAC	940	GUGAAAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGCAA	8340
1026	UUGCCGCC C CUUUCACG	941	CGUGAAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGGCAA	8341
1027	UGCCGCC C UUUCACGC	942	GCGUGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGCGGCA	8342
1028	GCCGCC C U UUCACGCA	943	UGCGUGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGCGGCA	8343
1032	CCCUUUC A CGCAAUGU	944	ACAUUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAAGGGG	8344
1036	UUUCACGC A AUGUGGAU	945	AUCCACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGUGAAA	8345
1049	GGAUUUUC U GCUUUAU	946	AUUAAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAUAUCC	8346
1052	UAUUCUGC U UUAUUGCC	947	GGCAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGAAUA	8347
1060	UUUAAUGC C UUAUAUG	948	CAUAUAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUUA	8348
1061	UUAUUGCC U UUAUUGC	949	GCAUAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCAUUA	8349
1070	UUAUUGC A UGCAUACA	950	UGUAUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUAUA	8350
1074	AUGCAUGC A UACAAGCA	951	UGCUUGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUGCAU	8351

1078	AUGCAUAC A AGCAAAAC	952	GUUUUGCU CUGAUGAG GCCGUUAGGC	CGAA IUAUGCAU	8352
1082	AUACAAGC A AAACAGGC	953	GCCUGUUU CUGAUGAG GCCGUUAGGC	CGAA ICUUGUAU	8353
1087	AGCAAAAC A GGUUUUA	954	UAAAAGCC CUGAUGAG GCCGUUAGGC	CGAA IUUUUGCU	8354
1091	AAACAGGC U UUUACUUU	955	AAAGUAAA CUGAUGAG GCCGUUAGGC	CGAA ICCUGUUU	8355
1097	GUUUUAC U UUCUCGCC	956	GGCGAGAA CUGAUGAG GCCGUUAGGC	CGAA IUAAAAGC	8356
1101	UUACUUUC U CGCCAACU	957	AGUUGGCG CUGAUGAG GCCGUUAGGC	CGAA IAAAGUAA	8357
1105	UUUCUCGC C AACUUACA	958	UGUAAGUU CUGAUGAG GCCGUUAGGC	CGAA ICGAGAAA	8358
1106	UUCUCGCC A ACUUACAA	959	UUGUAAGU CUGAUGAG GCCGUUAGGC	CGAA IGCAGAA	8359
1109	UCGCCAAC U UACAAGGC	960	GCCUUGUA CUGAUGAG GCCGUUAGGC	CGAA IUUGGCCA	8360
1113	CAACUUAC A AGGCCUUU	961	AAAGGCCU CUGAUGAG GCCGUUAGGC	CGAA IUAAGUUG	8361
1118	UACAAGGC C UUCUAAG	962	CUUAGAAA CUGAUGAG GCCGUUAGGC	CGAA ICCUUGUA	8362
1119	ACAAGGCC U UUCUAAGU	963	ACUUAGAA CUGAUGAG GCCGUUAGGC	CGAA IGCCUUGU	8363
1123	GGCCUUUC U AAGUAAAC	964	GUUUACUU CUGAUGAG GCCGUUAGGC	CGAA IAAAGGCC	8364
1132	AAGUAAAC A GUAUGUGA	965	UCACAUAC CUGAUGAG GCCGUUAGGC	CGAA IUUUACUU	8365
1143	AUGUGAAC C UUUACCCC	966	GGGUUAAA CUGAUGAG GCCGUUAGGC	CGAA IUUCACAU	8366
1144	UGUGAAC C UUUACCCC	967	CGGGUAAA CUGAUGAG GCCGUUAGGC	CGAA IGUUCACA	8367
1149	ACCUUUAC C CGUUGCU	968	AGCAACGG CUGAUGAG GCCGUUAGGC	CGAA IUAAGGU	8368
1150	CCUUUAC C CGUUGCU	969	GAGCAACG CUGAUGAG GCCGUUAGGC	CGAA IGUAAAGG	8369
1151	CUUUACCC C GUUGCUCG	970	CGAGCAAC CUGAUGAG GCCGUUAGGC	CGAA IGUAAAAG	8370
1157	CCCGUUGC U CGGCAACG	971	CGUUGCCG CUGAUGAG GCCGUUAGGC	CGAA ICAACGGG	8371
1162	UGCUCGGC A ACGCCUG	972	CAGGCCGU CUGAUGAG GCCGUUAGGC	CGAA ICCGAGCA	8372
1168	GCAACGGC C UGUCUAU	973	AUAGACCA CUGAUGAG GCCGUUAGGC	CGAA ICCGUUGC	8373
1169	CAACGGCC U GGUCUAUG	974	CAUAGACC CUGAUGAG GCCGUUAGGC	CGAA IGCCGUUG	8374
1174	GCCUGGUC U AUGCCAAG	975	CUUGGCAU CUGAUGAG GCCGUUAGGC	CGAA IACCAGGC	8375
1179	GUCUAUGC C AAGUGUUU	976	AAACACUU CUGAUGAG GCCGUUAGGC	CGAA ICAUAGAC	8376
1180	UCUAUGCC A AGUGUUUG	977	CAAACACU CUGAUGAG GCCGUUAGGC	CGAA IGCAUAGA	8377
1190	GUGUUUGC U GACGCAAC	978	GUUGCGUC CUGAUGAG GCCGUUAGGC	CGAA ICAAACAC	8378
1196	GCUGACGC A ACCCCCAC	979	GUGGGGGU CUGAUGAG GCCGUUAGGC	CGAA ICGUCAGC	8379
1199	GACGCAAC C CCCACUGG	980	CCAGUGGG CUGAUGAG GCCGUUAGGC	CGAA IUUGCUC	8380
1200	ACGCAACC C CCACUGGU	981	ACCAGUGG CUGAUGAG GCCGUUAGGC	CGAA IGUUGCGU	8381
1201	CGCAACCC C CACUGGUU	982	AACAGUG CUGAUGAG GCCGUUAGGC	CGAA IGGUUGCG	8382
1202	GCAACCCC C ACUGGUUG	983	CAACCAGU CUGAUGAG GCCGUUAGGC	CGAA IGGGUUGC	8383
1203	CAACCCCC A CUGGUUGG	984	CCAACCAG CUGAUGAG GCCGUUAGGC	CGAA IGGGGUUG	8384
1205	ACCCCCAC U GGUUGGGG	985	CCCCAACC CUGAUGAG GCCGUUAGGC	CGAA IUGGGGUU	8385
1215	GUUGGGGC U UGGCCAUA	986	UAUGGCCA CUGAUGAG GCCGUUAGGC	CGAA ICCCCAAC	8386
1220	GGCUUGGC C AUAGGCCA	987	UGGCCUAU CUGAUGAG GCCGUUAGGC	CGAA ICCAAGCC	8387
1221	GCUUGGCC A UAGGCCAU	988	AUGGCCUA CUGAUGAG GCCGUUAGGC	CGAA IGCCAAGC	8388
1227	CCAUAGGC C AUCAGCGC	989	GCGCUGAU CUGAUGAG GCCGUUAGGC	CGAA ICCUAUGG	8389
1228	CAUAGGCC A UCAGCGCA	990	UGCUGUGA CUGAUGAG GCCGUUAGGC	CGAA IGCCUAUG	8390
1231	AGGCCAUC A GCGAUGC	991	GCAUGGCG CUGAUGAG GCCGUUAGGC	CGAA IAUGGCCU	8391
1236	AUCAGCGC A UGCGUGGA	992	UCCACGCA CUGAUGAG GCCGUUAGGC	CGAA ICGCUGAU	8392
1247	CGUGGAAC C UUGUGUC	993	GACACAAA CUGAUGAG GCCGUUAGGC	CGAA IUUCCACG	8393
1248	GUGGAACC U UUGUGUCU	994	AGACACAA CUGAUGAG GCCGUUAGGC	CGAA IGUCCAC	8394
1256	UUUGUGUC U CCUCUGCC	995	GGCAGAGG CUGAUGAG GCCGUUAGGC	CGAA IACACAAA	8395
1258	UGUGUCUC C UCUGCCGA	996	UCGGCAGA CUGAUGAG GCCGUUAGGC	CGAA IAGACACA	8396
1259	GUGUCUCC U CUGCCGAU	997	AUCGGCAG CUGAUGAG GCCGUUAGGC	CGAA IGAGACAC	8397
1261	GUCUCCUC U GCCGAUCC	998	GGAUCGGC CUGAUGAG GCCGUUAGGC	CGAA IAGGAGAC	8398
1264	UCCUCUGC C GAUCCAUA	999	UAUGGAUC CUGAUGAG GCCGUUAGGC	CGAA ICAGAGGA	8399
1269	UGCCGAUC C AUACCGCG	1000	CGCGGUUA CUGAUGAG GCCGUUAGGC	CGAA IAUCCGCA	8400
1270	GCCGAUCC A UACCGCGG	1001	CCGCGGUA CUGAUGAG GCCGUUAGGC	CGAA IGAUCCGC	8401
1274	AUCCAUAU C GCGGAACU	1002	AGUUCGCG CUGAUGAG GCCGUUAGGC	CGAA IUAUGGAU	8402

1282	CGCGGAAC U CTUAGCCG	1003	CGGCUAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUCCGCG	8403
1284	CGGAACUC C UAGCCGCU	1004	AGCGGCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUUCG	8404
1285	GGAACUCC U AGCCGCUU	1005	AAGCGGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAGUCC	8405
1289	CUCCUAGC C GCUUGUUU	1006	AAACAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUAGGAG	8406
1292	CUAGCCGC U UGUUUUGC	1007	GCAAAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGCUAG	8407
1301	UGUUUUGC U CGCAGCAG	1008	CUGCUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAAAACA	8408
1305	UUGCUCGC A GCAGGUCU	1009	AGACCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGAGCAA	8409
1308	CUCGCAGC A GGUCUGGG	1010	CCCAGACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUGCGAG	8410
1313	AGCAGGUC U GGGGCAAA	1011	UUUGCCCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACCUGCU	8411
1319	UCUGGGGC A AAACUCAU	1012	AUGAGUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCCAGA	8412
1324	GGCAAAAC U CAUCGGGA	1013	UCCCGAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUUGCC	8413
1326	CAAAACUC A UCGGGACU	1014	AGUCCCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUUUUG	8414
1334	AUCGGGAC U GACAAUUC	1015	GAAUUGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCCGAU	8415
1338	GGACUGAC A AUUCUGUC	1016	GACAGAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCAGUCC	8416
1343	GACAAUUC U GUCGUGCU	1017	AGCACGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAUUGUC	8417
1351	UGUCGUGC U CUCCCGCA	1018	UGCGGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICACGACA	8418
1353	UCGUGCUC U CCCGCAAA	1019	UUUGCGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGCACGA	8419
1355	GUGCUCUC C CGCAAAUA	1020	UAUUUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGAGCAC	8420
1356	UGCUCUCC C GCAAAUAU	1021	AUAUUUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGAGACA	8421
1359	UCUCCGCG A AAUAUACA	1022	UGUAUAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGGAGA	8422
1367	AAUAUAUC A UCAUUUCC	1023	GGAAUAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUAUAUU	8423
1370	UAUAUAUC A UUUCCAUG	1024	CAUGGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUGUAUA	8424
1375	AUCAUUUC C AUGGCUGC	1025	GCAGCCAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAAUGAU	8425
1376	UCAUUUCC A UGGCUGCU	1026	AGCAGCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAAUAUGA	8426
1381	UCCAUGGC U GCUAGGCU	1027	AGCCUAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCAUGGA	8427
1384	AUGGCUGC U AGGCUGUG	1028	CACAGCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGCCAU	8428
1389	UGCUGGC U GUGCUGCC	1029	GGCAGCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUAGCA	8429
1394	GGCUGUGC U GCCAACUG	1030	CAGUUGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICACAGCC	8430
1397	UGUGCUGC C AACUGGAU	1031	AUCCAGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGCACA	8431
1398	GUGCUGCC A ACUGGAUC	1032	GAUCCAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCAGCAC	8432
1401	CUGCCAAC U GGAUCCUA	1033	UAGGAUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGGCAG	8433
1407	ACUGGAUC C UACGCGGG	1034	CCC CGGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUCCAGU	8434
1408	CUGGAUCC U ACGCGGGA	1035	UCCCGCGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAUCCAG	8435
1421	GGGACGUC C UUUGUUUA	1036	UAAACAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACGUCCC	8436
1422	GGACGUCC U UUGUUUAC	1037	GUAAACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGACGUCC	8437
1434	UUUACGUC C CGUCGGCG	1038	CGCCGACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACGUAAA	8438
1435	UUACGUCC C GUCGGCGC	1039	GCGCCGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGACGUAA	8439
1444	GUCGGGCG U GAAUCCCG	1040	CGGGAUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGCCGAC	8440
1450	GCUGAAUC C CGCGGACG	1041	CGUCCGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUCAGC	8441
1451	CUGAAUCC C GCGGACGA	1042	UCGUCCGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAUUCAG	8442
1461	CGGACGAC C CCUCCCGG	1043	CCGGGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCGUCCG	8443
1462	GGACGACC C CUCCCGGG	1044	CCCGGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCGUCC	8444
1463	GACGACCC C UCCCGGGG	1045	CCCCGGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGUCGUC	8445
1464	ACGACCCC U CCCGGGGC	1046	GCCCCGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGGUCGU	8446
1466	GACCCUCC C CGGGGCCG	1047	CGGCCCGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGGUC	8447
1467	ACCCCUCC C GGGGCCGC	1048	GCGGCCCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGGGU	8448
1473	CCCGGGGC C GCUUGGGG	1049	CCCCAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCCGGG	8449
1476	GGGGCCGC U UGGGGCUC	1050	GAGCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGCCCC	8450
1483	CUUGGGGC U CUACCGCC	1051	GGCGGUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCAAG	8451
1485	UGGGGCUC U ACCGCCCC	1052	CGGGCGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGCCCCA	8452
1488	GGCUCUAC C GCCCGCUU	1053	AAGCGGGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAGAGCC	8453



1491	UCUACCGC C CGCUUCUC	1054	GAGAAGCG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGUAGA	8454
1492	CUACCGCC C GCUUCUCC	1055	GGAGAAGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGUAG	8455
1495	CCGCCCGC U UCUCCGCC	1056	GGCGGAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGCGG	8456
1498	CCCGCUUC U CCGCCUAU	1057	AUAGGCGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAGCGGG	8457
1500	CGCUUCUC C GCCUAUUG	1058	CAAUAGGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGAAGCG	8458
1503	UUCUCCGC C UAUUGUAC	1059	GUACAUA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGAGAA	8459
1504	UCUCCGCC U AUUGUACC	1060	GGUACAAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGAGAA	8460
1512	UAUUGUAC C GACCGUCC	1061	GGACGGUC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUACAAUA	8461
1516	GUACCGAC C GUCCACGG	1062	CCGUGGAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUCCGUAC	8462
1520	CGACCGUC C ACGGGGCG	1063	CGCCCCGU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACGGUCG	8463
1521	GACCGUCC A CGGGGCGC	1064	GCGCCCCG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGACGGUC	8464
1530	CGGGGCGC A CCUCUCUU	1065	AAGAGAGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGCCCCG	8465
1532	GGGCGCAC C UCUCUUUA	1066	UAAAGAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGCGCCC	8466
1533	GGCGCACC U CUCUUUAC	1067	GUAAAGAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUGCGCC	8467
1535	CGCACCUC U CUUUACGC	1068	CGGUAAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGGUGCG	8468
1537	CACCUCUC U UUACGCGG	1069	CCGCGUAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGAGGUG	8469
1548	ACGCGGAC U CCCCUCU	1070	AGACGGGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUCCGCGU	8470
1550	GCGGACUC C CCGUCUGU	1071	ACAGACGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGUCCCG	8471
1551	CGGACUCC C CGUCUGUG	1072	CACAGACG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGAGUCCG	8472
1552	GGACUCCC C GUCUGUGC	1073	GCACAGAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGAGUCC	8473
1556	UCCCGGUC U GUGCCUUC	1074	GAAGGCAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACGGGGA	8474
1561	GUCUGUGC C UUCUCAUC	1075	GAUGAGAA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICACAGAC	8475
1562	UCUGUGCC U UCUCAUCU	1076	AGAUGAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGCACAGA	8476
1565	GUGCCUUC U CAUCUGCC	1077	GGCAGAU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAGGCAC	8477
1567	GCCUUCUC A UCUGCCGG	1078	CCGCGAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGAAGGC	8478
1570	UUCUCAUC U GCCGGACC	1079	GGUCCGGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAUGAGAA	8479
1573	UCAUCUGC C GGACCGUG	1080	CACGGUCC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAGAUGA	8480
1578	UGCCGGAC C GUGUGCAC	1081	GUGCACAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUCCGGCA	8481
1585	CCGUGUGC A CUUCGCUU	1082	AAGCGAAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICACACGG	8482
1587	GUGUGCAC U UCGCUUCA	1083	UGAAGCGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGCACAC	8483
1592	CACUUCGC U UCACUCU	1084	AGAGGUGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGAAGUG	8484
1595	UUCGCUUC A CCUCUGCA	1085	UGCAGAGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAAGCGAA	8485
1597	CGCUUCAC C UCUGCACG	1086	CGUGCAGA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGAAGCG	8486
1598	GCUUCACC U CUGCACGU	1087	ACGUGCAG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGAAGC	8487
1600	UUCACCUC U GCACGUCG	1088	CGACGUGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IAGGUGAA	8488
1603	ACCUCUGC A CGUCGCAU	1089	AUGCGACG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAGAGGU	8489
1610	CACGUCGC A UGGAGACC	1090	GGUCUCCA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGACGUG	8490
1618	AUGGAGAC C ACCGUGAA	1091	UUCACGGU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUCUCCAU	8491
1619	UGGAGACC A CCGUGAAC	1092	GUUCACGG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUCUCCA	8492
1621	GAGACCAC C GUGAACGC	1093	GCGUUCAC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGGUCUC	8493
1630	GUGAACGC C CACAGGAA	1094	UUCCUGUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGUUCAC	8494
1631	UGAACGCC C ACAGGAAC	1095	GUUCCUGU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICGGUUCA	8495
1632	GAACGCC A CAGGAACC	1096	GGUCCUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGCGUUC	8496
1634	ACGCCAC A GGAACUG	1097	CAGGUUCC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUGGGCGU	8497
1640	ACAGGAAC C UGCCCCAAG	1098	CUUGGGCA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IUUCCUGU	8498
1641	CAGGAACC U GCCCAAGG	1099	CCUUGGGC CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGUUCCUG	8499
1644	GAACCGUC C CAAGGUCU	1100	AGACCUUG CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAGGUUC	8500
1645	AACCGGCC C AAGGUCUU	1101	AAGACCUU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGCAGGUU	8501
1646	ACCUGCCC A AGGUCUUG	1102	CAAGACCU CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IGGCAGGU	8502
1652	CCAAGGUC U UGCAUAAG	1103	CUUAUGCA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA IACCUUGG	8503
1656	GGUCUUGC A UAAGAGGA	1104	UCCUCUUA CUGAUGAG <u>GCCGUUAGGC</u>	CGAA ICAAGACC	8504



1666	AAGAGGAC U CUUGGACU	1105	AGUCCAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCUCUU	8505
1668	GAGGACUC U UGGACUUU	1106	AAAGUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUCCUC	8506
1674	UCUUGGAC U UUCAGCAA	1107	UUGCUGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCAAGA	8507
1678	GGACUUUC A GCAAUGUC	1108	GACAUUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAAGUCC	8508
1681	CUUUCAGC A AUGUCAAC	1109	GUUGACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUGAAAG	8509
1687	GCAAUGUC A ACGACCGA	1110	UCGGUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAUUGC	8510
1693	UCAACGAC C GACCUUGA	1111	UCAAGGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCGUUGA	8511
1697	CGACCGAC C UUGAGGCA	1112	UGCCUCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCGGUCG	8512
1698	GACCGACC U UGAGGCAU	1113	AUGCCUCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCGGUC	8513
1705	CUUGAGGC A UACUUCAA	1114	UUGAAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUCAAG	8514
1709	AGGCAUAC U UCAAAGAC	1115	GUCUUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAUGCCU	8515
1712	CAUACUUC A AAGACUGU	1116	ACAGUCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAGUAUG	8516
1718	UCAAGAC U GUGUGUUU	1117	AAACACAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCUUUGA	8517
1769	UAAAGGUC U UUGUACUA	1118	UAGUACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACCUUUA	8518
1776	CUUUGUAC U AGGAGGCU	1119	AGCCUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUACAAAG	8519
1784	UAGGAGGC U GUAGGCAU	1120	AUGCCUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUCCUA	8520
1791	CUGUAGGC A UAAAUUGG	1121	CCAAUUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUACAG	8521
1807	GUGUGUUC A CCAGCACC	1122	GGUGCUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAACACAC	8522
1809	GUGUUCAC C AGCACCAU	1123	AUGGUGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAACAC	8523
1810	UGUUCACC A GCACCAUG	1124	CAUGGUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUGAACA	8524
1813	UCACCAGC A CCAUGCAA	1125	UUGCAUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUGGUGA	8525
1815	ACCAGCAC C AUGCAACU	1126	AGUUGCAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGCUGGU	8526
1816	CCAGCACC A UGCAACUU	1127	AAGUUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCUGG	8527
1820	CACCAUGC A ACUUUUUC	1128	GAAAAAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUGGUG	8528
1823	CAUGCAAC U UUUUCACC	1129	GGUGAAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGCAUG	8529
1829	ACUUUUUC A CCUCUGCC	1130	GGCAGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAAAAGU	8530
1831	UUUUUCAC C UCUGCCUA	1131	UAGGCAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAAAAA	8531
1832	UUUUCACC U CUGCCUAA	1132	UUAGGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUGAAAA	8532
1834	UUCACCUC U GCCUAAUC	1133	GAUUAAGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGUGAA	8533
1837	ACCUCUGC C UAAUCAUC	1134	GAUGAUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGAGGU	8534
1838	CCUCUGCC U AAUCAUCU	1135	AGAUGAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCAGAGG	8535
1843	GCCUAAUC A UCUCAUGU	1136	ACAUGAGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUAGGC	8536
1846	UAAUCAUC U CAUGUUCA	1137	UGAACAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUAUGA	8537
1848	AUCAUCUC A UGUUCAUG	1138	CAUGAACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGAUGAU	8538
1854	UCAUGUUC A UGUCCUAC	1139	GUAGGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAACAUGA	8539
1859	UUCAUGUC C UACUGUUC	1140	GAACAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAUGAA	8540
1860	UCAUGUCC U ACUGUUCA	1141	UGAACAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGACAUGA	8541
1863	UGUCCUAC U GUUCAAGC	1142	GCUUGAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAGGACA	8542
1868	UACUGUUC A AGCCUCCA	1143	UGGAGGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAACAGUA	8543
1872	GUUCAAGC C UCCAAGCU	1144	AGCUUGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUUGAAC	8544
1873	UUCAAGCC U CCAAGCUG	1145	CAGCUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCUGUAA	8545
1875	CAAGCCUC C AAGCUGUG	1146	CACAGCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGCUUG	8546
1876	AAGCCUCC A AGCUGUGC	1147	GCACAGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGCUU	8547
1880	CUCCAAGC U GUGCCUUG	1148	CAAGGCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUUGGAG	8548
1885	AGCUGUGC C UUGGGUGG	1149	CCACCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICACAGCU	8549
1886	GCUGUGCC U UGGGUGGC	1150	GCCACCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCACAGC	8550
1895	UGGGUGGC U UUGGGGCA	1151	UGCCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCACCCA	8551
1903	UUUGGGGC A UGGACAUU	1152	AAUGUCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCCAAA	8552
1909	GCAUGGAC A UUGACCCG	1153	CGGGUCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCAUGC	8553
1915	ACAUUGAC C CGUAUAAA	1154	UUUAUACG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCAAUGU	8554
1916	CAUUGACC C GUUAUAAAG	1155	CUUUAUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCAAUG	8555

1935	UUUGGAGC U UCUGUGGA	1156	UCCACAGA CUGAUGAG GCCGUUAGGC	CGAA ICUCCAAA	8556
1938	GGAGCUUC U GUGGAGUU	1157	AACUCCAC CUGAUGAG GCCGUUAGGC	CGAA IAAGCUCC	8557
1949	GGAGUUAC U CUCUUUUU	1158	AAAAAGAG CUGAUGAG GCCGUUAGGC	CGAA IUAACUCC	8558
1951	AGUUACUC U CUUUUUUG	1159	CAAAAAAG CUGAUGAG GCCGUUAGGC	CGAA IAGUAACT	8559
1953	UUACUCUC U UUUUUGCC	1160	GGCAAAAA CUGAUGAG GCCGUUAGGC	CGAA IAGAGUAA	8560
1961	UUUUUUGC C UUCUGACU	1161	AGUCAGAA CUGAUGAG GCCGUUAGGC	CGAA ICAAAAAA	8561
1962	UUUUUGCC U UCUGACUU	1162	AAGUCAGA CUGAUGAG GCCGUUAGGC	CGAA IGCAAAAA	8562
1965	UUGCCUUC U GACUUCUU	1163	AAGAAGUC CUGAUGAG GCCGUUAGGC	CGAA IAAGGCAA	8563
1969	CUUCUGAC U UCUUUCCU	1164	AGGAAAGA CUGAUGAG GCCGUUAGGC	CGAA IUCAGAAG	8564
1972	CUGACUUC U UUCUUCU	1165	AGAAGGAA CUGAUGAG GCCGUUAGGC	CGAA IAAGUCAG	8565
1976	CUUCUUUC C UUCUAUUC	1166	GAAUAGAA CUGAUGAG GCCGUUAGGC	CGAA IAAAGAAG	8566
1977	UUCUUUCC U UCUAUUCG	1167	CGAAUAGA CUGAUGAG GCCGUUAGGC	CGAA IGAAGAA	8567
1980	UUUCCUUC U AUUCGAGA	1168	UCUCGAAU CUGAUGAG GCCGUUAGGC	CGAA IAAGGAAA	8568
1991	UCGAGAU C CCUCGACA	1169	UGUCGAG CUGAUGAG GCCGUUAGGC	CGAA IAUCUCGA	8569
1993	GAGAUUC C UCGACACC	1170	GGUGUGCA CUGAUGAG GCCGUUAGGC	CGAA IAGAUCUC	8570
1994	AGAUCUCC U CGACACCG	1171	CGGUGUCG CUGAUGAG GCCGUUAGGC	CGAA IGAGAUUC	8571
1999	UCCUCGAC A CCGCCUCU	1172	AGAGGCGG CUGAUGAG GCCGUUAGGC	CGAA IUCGAGGA	8572
2001	CUCGACAC C GCCUCUGC	1173	GCAGAGGC CUGAUGAG GCCGUUAGGC	CGAA IUGUCGAG	8573
2004	GACACGCG C UCUGUCU	1174	AGAGCAGA CUGAUGAG GCCGUUAGGC	CGAA ICGGUGUC	8574
2005	ACACGCGC U CUGCUCUG	1175	CAGAGCAG CUGAUGAG GCCGUUAGGC	CGAA ICGGUGU	8575
2007	ACCGCCUC U GCUCUGUA	1176	UACAGAGC CUGAUGAG GCCGUUAGGC	CGAA IAGGCGGU	8576
2010	GCCUCUGC U CUGUAUCG	1177	CGAUACAG CUGAUGAG GCCGUUAGGC	CGAA ICAGAGGC	8577
2012	CUCUGCUC U GUUACGGG	1178	CCCGAUAC CUGAUGAG GCCGUUAGGC	CGAA IAGCAGAG	8578
2025	CGGGGGGC C UUAGAGUC	1179	GACUCUAA CUGAUGAG GCCGUUAGGC	CGAA ICCCCCG	8579
2026	GGGGGGCC U UAGAGUCU	1180	AGACUCUA CUGAUGAG GCCGUUAGGC	CGAA IGCCCCC	8580
2034	UUAGAGUC U CCGGAACA	1181	UGUUCGCG CUGAUGAG GCCGUUAGGC	CGAA IACUCUAA	8581
2036	AGAGUCUC C GGAACAUU	1182	AAUGUUC CUGAUGAG GCCGUUAGGC	CGAA IAGACUCU	8582
2042	UCCGGAAC A UUGUUCAC	1183	GUGAACAA CUGAUGAG GCCGUUAGGC	CGAA IUUCCGGA	8583
2049	CAUUGUUC A CCUCACCA	1184	UGGUGAGG CUGAUGAG GCCGUUAGGC	CGAA IAACAAUG	8584
2051	UUGUUCAC C UCACCAUA	1185	UAUGGUGA CUGAUGAG GCCGUUAGGC	CGAA IUGAACAA	8585
2052	UGUUCACC U CACCAUAC	1186	GUUUGUG CUGAUGAG GCCGUUAGGC	CGAA IGUGAACAA	8586
2054	UUCACCUC A CCAUACGG	1187	CCGUUUG CUGAUGAG GCCGUUAGGC	CGAA IAGGUGAA	8587
2056	CACCUCAC C AUACGGCA	1188	UGCCGUU CUGAUGAG GCCGUUAGGC	CGAA IUGAGGUG	8588
2057	ACCUCACC A UACGGCAC	1189	GUGCCGUA CUGAUGAG GCCGUUAGGC	CGAA IGUGAGGU	8589
2064	CAUACGGC A CUCAGGCA	1190	UGCCUGAG CUGAUGAG GCCGUUAGGC	CGAA ICCGUUAG	8590
2066	UACGGCAC U CAGGCAAG	1191	CUUGCCUG CUGAUGAG GCCGUUAGGC	CGAA IUGCCGUA	8591
2068	CGGCACUC A GGAAGCU	1192	AGCUUGCC CUGAUGAG GCCGUUAGGC	CGAA IAGUGCCG	8592
2072	ACUCAGGC A AGCUAUUC	1193	GAAUAGCU CUGAUGAG GCCGUUAGGC	CGAA ICUGAGU	8593
2076	AGGCAAGC U AUUCUGUG	1194	CACAGAAU CUGAUGAG GCCGUUAGGC	CGAA ICUUGCCU	8594
2081	AGCUAUUC U GUGUUGGG	1195	CCCAACAC CUGAUGAG GCCGUUAGGC	CGAA IAAUAGCU	8595
2105	GAUGAAUC U AGCCACCU	1196	AGGUGGCU CUGAUGAG GCCGUUAGGC	CGAA IAUUCAUC	8596
2109	AAUCUAGC C ACCUGGGU	1197	ACCCAGGU CUGAUGAG GCCGUUAGGC	CGAA ICUAGAUU	8597
2110	AUCUAGCC A CCUGGGUG	1198	CACCCAGG CUGAUGAG GCCGUUAGGC	CGAA IGCUAGAU	8598
2112	CUAGCCAC C UGGGUGGG	1199	CCCACCCA CUGAUGAG GCCGUUAGGC	CGAA IUGGCUAG	8599
2113	UAGCCACC U GGGUGGGA	1200	UCCCAACC CUGAUGAG GCCGUUAGGC	CGAA IUGGCCUA	8600
2138	GGAAGAUC C AGCAUCCA	1201	UGGAUGCU CUGAUGAG GCCGUUAGGC	CGAA IAUUUUCC	8601
2139	GAAGAUC C AGCAUCCA	1202	CUGGAUGC CUGAUGAG GCCGUUAGGC	CGAA IGAUCUUC	8602
2142	GAUCCAGC A UCCAGGGA	1203	UCCUGGA CUGAUGAG GCCGUUAGGC	CGAA ICUGGAUC	8603
2145	CCAGCAUC C AGGAAUUA	1204	AAUUCUU CUGAUGAG GCCGUUAGGC	CGAA IAUUCUGG	8604
2146	CAGCAUCC A GGGAAUUA	1205	UAAUCCC CUGAUGAG GCCGUUAGGC	CGAA IGAUCUG	8605
2161	UAGUAGUC A GCUAUGUC	1206	GACAUAGC CUGAUGAG GCCGUUAGGC	CGAA IACUACUA	8606

2164	UAGUCAGC U AUGUCAAC	1207	GUUGACAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUGACUA	8607
2170	GCUAUGUC A ACGUUAU	1208	AUUAACGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAUAGC	8608
2185	AUAUGGGC C UAAAAAUC	1209	GAUUUUUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCAUAU	8609
2186	UAUGGGCC U AAAAAUCA	1210	UGAUUUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCCCAUA	8610
2194	UAAAAAUC A GACAACUA	1211	UAGUUGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUUUUA	8611
2198	AAUCAGAC A ACUAUUGU	1212	ACAAUAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCUGAUU	8612
2201	CAGACAAC U AUUGUGGU	1213	ACCACAAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGUCUG	8613
2213	GUGGUUUC A CAUUUCCU	1214	AGGAAAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAACCAC	8614
2215	GGUUUCAC A UUUCUGU	1215	ACAGGAAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAAACC	8615
2220	CACAUUUC C UGUCUUAC	1216	GUAAGACA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAUGUG	8616
2221	ACAUUUC U GUCUACU	1217	AGUAAGAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAAUGU	8617
2225	UUCUGUC U UACUUUG	1218	CAAAAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACAGGAA	8618
2229	UGUCUAC U UUUGGGCG	1219	CGCCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAAAGACA	8619
2244	CGAGAAAC U GUUCUUGA	1220	UCAAGAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUCUCG	8620
2249	AACUGUUC U UGAAUAUU	1221	AAUAUUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAACAGUU	8621
2265	UUGGUGUC U UUUGGAGU	1222	ACUCCAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACACCAA	8622
2284	GAUUCGC A CUCCUCCU	1223	AGGAGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGAAUCC	8623
2286	AUUCGCAC U CCUCCUGC	1224	GCAGGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGCGAAU	8624
2288	UCGCACUC C UCCUGCAU	1225	AUGCAGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUGCGA	8625
2289	CGCACUCC U CCUGCAUA	1226	UAUGCAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAGUGCG	8626
2291	CACUCCUC C UGCAUAUA	1227	UAUAUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGAGUG	8627
2292	ACUCCUCC U GCAUAUAG	1228	CUAUAUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAGGAGU	8628
2295	CCUCCUGC A UAUAGACC	1229	GGUCUAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGGAGG	8629
2303	AUAUAGAC C ACCAAUUG	1230	CAUUUGGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCUAUAU	8630
2304	UAUAGACC A CCAAUUGC	1231	GCAUUUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCUAUA	8631
2306	UAGACCAC C AAAUGCCC	1232	GGGCAUUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGGUCUA	8632
2307	AGACCACC A AAUGCCCC	1233	GGGGCAUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUGGUCU	8633
2313	CCAAUUGC C CCUAUCUU	1234	AAGAUAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAUUUGG	8634
2314	CAAUUGCC C CUAUUUUA	1235	UAAGAUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCAUUUG	8635
2315	AAAUGCCC C UAUCUUUA	1236	AUAAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGCAUUU	8636
2316	AAUGCCCC U AUCUUAUC	1237	GAUAAGAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGGCAUU	8637
2320	CCCCUAUC U UAUCAACA	1238	UGUUGAUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUAGGGG	8638
2325	AUCUUAUC A ACACUUC	1239	GGAAGUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUAGAU	8639
2328	UUAUCAAC A CUUCCGGA	1240	UCCGGAAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGAUAA	8640
2330	AUCAACAC U UCCGGAAA	1241	UUUCCGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGUUGAU	8641
2333	AACACUUC C GGAAACUA	1242	UAGUUUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAGUGUU	8642
2340	CCGGAAAC U ACUGUUGU	1243	ACAACAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUUCCGG	8643
2343	GAAACUAC U GUUGUUAG	1244	CUAACAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAGUUUC	8644
2362	GAAGAGGC A GGUCCCU	1245	AGGGGACC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUCUUC	8645
2367	GGCAGGUC C CCUAGAAG	1246	CUUCUAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACCUGCC	8646
2368	GCAGGUCC C CUAGAAGA	1247	UCUUCUAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGACCUGC	8647
2369	CAGGUCCC C UAGAAGAA	1248	UUCUUCUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGACCUG	8648
2370	AGGUCCCC U AGAAGAAG	1249	CUUCUUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGGACCU	8649
2382	AGAAGAAC U CCCUCGCC	1250	GGCGAGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUCUUCU	8650
2384	AAGAACUC C CUCGCCUC	1251	GAGGCGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUUCUU	8651
2385	AGAACUCC C UCGCCUCG	1252	CGAGGCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAGUUCU	8652
2386	GAACUCCC U CGCCUCGC	1253	GCGAGGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGAGUUC	8653
2390	UCCUCGC C UCGCAGAC	1254	GUCUGCGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGAGGGA	8654
2391	CCCUCGCC U CGCAGACG	1255	CGUCUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGAGGGG	8655
2395	CGCCUCGC A GACGAAGG	1256	CCUCUGUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGAGGCG	8656
2406	CGAAGGUC U CAAUCGCC	1257	GGCGAUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IACCUUCG	8657

2408	AAGGUCUC A AUCGCCGC	1258	GCGGCGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGACCUU	8658
2414	UCAAUCGC C GCGUCGCA	1259	UGCGACGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICGAUUGA	8659
2422	CGCGUCGC A GAAGAUCU	1260	AGAUCUUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICGACGCG	8660
2430	AGAAGAUC U CAAUCUCG	1261	CGAGAUUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUCUCU	8661
2432	AAGAUCUC A AUCUCGGG	1262	CCCAGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGAUCUU	8662
2436	UCUCAUUC U CGGGAAUC	1263	GAUUCCCG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUGAGA	8663
2445	CGGGAAUC U CAAUGUUA	1264	UAACAUUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUCCCG	8664
2447	GGAAUCUC A AUGUUAGU	1265	ACUAACAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGAUUCC	8665
2460	UAGUAUUC C UUGGACAC	1266	GUGUCCAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAUACUA	8666
2461	AGUAUUC U UGGACACA	1267	UGUGUCCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAUACU	8667
2467	CCUUGGAC A CAUAAGGU	1268	ACCUUAUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCCAAGG	8668
2469	UUGGACAC A UAAGGUGG	1269	CCACCUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUGUCCAA	8669
2483	UGGGAAAC U UUACGGGG	1270	CCCGUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUCCCA	8670
2493	UACGGGGC U UUAUUCU	1271	AAGAAUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCCCGUA	8671
2500	CUUUAUUC U UCUACGGU	1272	ACCGUAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAUAAAG	8672
2503	UAUUCUUC U ACGGUACC	1273	GGUACCGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAGAAUA	8673
2511	UACGGUAC C UUGCUUUA	1274	UAAAGCAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUACCGUA	8674
2512	ACGGUACC U UGCUUUA	1275	UUAAAGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUACCGU	8675
2516	UACCUUGC U UUAUAUCU	1276	AGGAUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAAGGUA	8676
2523	CUUUAUUC C UAAAUAGG	1277	GCCAUUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUUAAAG	8677
2524	UUUAUUC U AAAUGGCA	1278	UGCCAUUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAUUAUA	8678
2532	UAAAUAGG A AACUCCU	1279	AAGGAGUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCAUUUA	8679
2536	UGGCAAAC U CCUUCUU	1280	AAAGAAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUUGCCA	8680
2538	GCAAACUC C UUCUUUUC	1281	GAAAAGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUUUGC	8681
2539	CAAACUCC U UCUUUUCC	1282	GGAAAAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGUUUG	8682
2542	ACUCCUUC U UUUCUGA	1283	UCAGGAAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAGGAGU	8683
2547	UUCUUUUC C UGACAUUC	1284	GAAUGUCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAAAGAA	8684
2548	UCUUUUCC U GACAUUCA	1285	UGAAUGUC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAAAAGA	8685
2552	UUCUGAC A UUCAUUG	1286	CAAUGAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCAGGAA	8686
2556	UGACAUUC A UUUGCAGG	1287	CCUGCAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAAUGUCA	8687
2562	UCAUUGC A GGAGACA	1288	UGUCCUCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAAUGA	8688
2570	AGGAGGAC A UUGUUGAU	1289	AUCAACAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCCUCCU	8689
2589	AUGUAAGC A AUUUGUGG	1290	CCACAAAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICUUACAU	8690
2601	UGUGGGGC C CCUACAG	1291	CUGUAAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCCCACA	8691
2602	GUGGGGCC C CUUACAGU	1292	ACUGUAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCCCCAC	8692
2603	UGGGGCC C UUACAGUA	1293	UACUGUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGCCCCA	8693
2604	GGGGCCCC U UACAGUAA	1294	UUACUGUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGGCCCC	8694
2608	CCCCUAC A GUAAUGA	1295	UCAUUUAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUAAGGGG	8695
2621	AUGAAAC A GGAGACUU	1296	AAGUCUCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUUUCAU	8696
2628	CAGGAGAC U UAAAUUA	1297	UUAAUUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCUCCUG	8697
2638	AAAUUAC U AUGCCUGC	1298	GCAGGCAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUAUUUU	8698
2643	AACUAUGC C UGCUAGGU	1299	ACCUAGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAUAGUU	8699
2644	ACUAUGCC U GCUAGGUU	1300	AACCUAGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCAUAGU	8700
2647	AUGCCUGC U AGGUUUUA	1301	UAAAACCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAGGCAU	8701
2658	GUUUUAUC C CAAUGUUA	1302	UAACAUTG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUAAAAC	8702
2659	UUUUAUCC A AAUGUUAC	1303	GUAACAUT CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAUAAA	8703
2660	UUUAUCCC A AUGUUACU	1304	AGUAACAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGAUAAA	8704
2668	AAUGUAC U AAAUAUU	1305	AAUAUUU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUAACAUU	8705
2679	AUAUUGC C CUUAGUA	1306	UAUCUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAAAUAU	8706
2680	UAUUGCC C UUGAUAA	1307	UUUAUUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCAAAUA	8707
2681	AUUUGCCC U UAGAUAA	1308	UUUAUCUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGCAAAU	8708

2696	AAGGGAUC A AACCGUAU	1309	AUACGGUU CUGAUGAG	GCCGUUAGGC	CGAA IAUCCCUU	8709
2700	GAUCAAAC C GUUAUAUC	1310	GAUAAUAC CUGAUGAG	GCCGUUAGGC	CGAA IUUUGAUC	8710
2709	GUUAUAUC C AGAGUAUG	1311	CAUACUCU CUGAUGAG	GCCGUUAGGC	CGAA IAUAAUAC	8711
2710	UAUUAUCC A GAGUAUGU	1312	ACAUACUC CUGAUGAG	GCCGUUAGGC	CGAA IGAUAAUA	8712
2727	AGUUAUCC A UUACUUC	1313	GGAAGUAA CUGAUGAG	GCCGUUAGGC	CGAA IAUUAACU	8713
2732	AUCAUUC U UCCAGACG	1314	CGUCUGGA CUGAUGAG	GCCGUUAGGC	CGAA IUAAUGAU	8714
2735	AUUACUUC C AGACGCGA	1315	UCGCGUCU CUGAUGAG	GCCGUUAGGC	CGAA IAAGUAAU	8715
2736	UUACUUC A GACGCGAC	1316	GUCGCGUC CUGAUGAG	GCCGUUAGGC	CGAA IGAAGUAA	8716
2745	GACGCGAC A UUAUUUAC	1317	GUAAAUAA CUGAUGAG	GCCGUUAGGC	CGAA IUCGCGUC	8717
2754	UUAUUUAC A CACUCUUU	1318	AAAGAGUG CUGAUGAG	GCCGUUAGGC	CGAA IUAAAUAA	8718
2756	AUUUACAC A CUCUUUGG	1319	CCAAAGAG CUGAUGAG	GCCGUUAGGC	CGAA IUGUAAAU	8719
2758	UUACACAC U CUUUGGAA	1320	UUCCAAAG CUGAUGAG	GCCGUUAGGC	CGAA IUGUGUAA	8720
2760	ACACACUC U UUGGAAGG	1321	CCUCCAA CUGAUGAG	GCCGUUAGGC	CGAA IAGUGUGU	8721
2777	CGGGGAUC U UAUUAAA	1322	UUUAUUA CUGAUGAG	GCCGUUAGGC	CGAA IAUCCCCG	8722
2794	AGAGAGUC C ACACGUAG	1323	CUACGUGU CUGAUGAG	GCCGUUAGGC	CGAA IACUCUCU	8723
2795	GAGAGUCC A CACGUAGC	1324	GCUACGUG CUGAUGAG	GCCGUUAGGC	CGAA IGACUCUC	8724
2797	GAGUCCAC A CGUAGCGC	1325	GCGCUACG CUGAUGAG	GCCGUUAGGC	CGAA IUGGACUC	8725
2806	CGUAGCGC C UCAUUUUG	1326	CAAAUAGA CUGAUGAG	GCCGUUAGGC	CGAA ICGCUACG	8726
2807	GUAGCGCC U CAUUUUGC	1327	GCAAAUUG CUGAUGAG	GCCGUUAGGC	CGAA ICGCUAC	8727
2809	AGCGCCUC A UUUUGCGG	1328	CCGCAAAA CUGAUGAG	GCCGUUAGGC	CGAA IAGCGCU	8728
2821	UGCGGGUC A CCAUAUUC	1329	GAAUAUGG CUGAUGAG	GCCGUUAGGC	CGAA IACCGCA	8729
2823	CGGGUCAC C AUAUUCUU	1330	AAGAAUUA CUGAUGAG	GCCGUUAGGC	CGAA IUGACCCG	8730
2824	GGGUCACC A UAUUCUUG	1331	CAAGAAUA CUGAUGAG	GCCGUUAGGC	CGAA IGUGACCC	8731
2830	CCAUAUUC U UGGGAACA	1332	UGUCCCA CUGAUGAG	GCCGUUAGGC	CGAA IAAUAUGG	8732
2838	UUGGGAAC A AGAUCUAC	1333	GUAGAUCU CUGAUGAG	GCCGUUAGGC	CGAA IUUCCCAA	8733
2844	ACAAGAUC U ACAGCAUG	1334	CAUGCUGU CUGAUGAG	GCCGUUAGGC	CGAA IAUUCUGU	8734
2847	AGAUCUAC A GCAUGGGA	1335	UCCCAUGC CUGAUGAG	GCCGUUAGGC	CGAA IUAGAUCU	8735
2850	UCUACAGC A UGGGAGGU	1336	ACCUCCCA CUGAUGAG	GCCGUUAGGC	CGAA ICUGUAGA	8736
2864	GGUUGGUC U UCCAAACC	1337	GGUUUGGA CUGAUGAG	GCCGUUAGGC	CGAA IACCAACC	8737
2867	UGGUCUUC C AAACCUCG	1338	CGAGGUUU CUGAUGAG	GCCGUUAGGC	CGAA IAAGACCA	8738
2868	GGUCUUC A AACCUCGA	1339	UCGAGGUU CUGAUGAG	GCCGUUAGGC	CGAA IGAAGACC	8739
2872	UCCAAAC C UCGAAAAG	1340	CUUUUCGA CUGAUGAG	GCCGUUAGGC	CGAA IUUUGGAA	8740
2873	UCCAAACC U CGAAAAGG	1341	CCUUUUCG CUGAUGAG	GCCGUUAGGC	CGAA IGUUUGGA	8741
2883	GAAAAGGC A UGGGGACA	1342	UGUCCCA CUGAUGAG	GCCGUUAGGC	CGAA ICCUUUUC	8742
2891	AUGGGGAC A AAUCUUUC	1343	GAAAGAUU CUGAUGAG	GCCGUUAGGC	CGAA IUCCCCAU	8743
2896	GACAAUUC U UUCUGUCC	1344	GGACAGAA CUGAUGAG	GCCGUUAGGC	CGAA IAUUUGUC	8744
2900	AAUCUUUC U GUCCCCAA	1345	UUGGGGAC CUGAUGAG	GCCGUUAGGC	CGAA IAAAGAUU	8745
2904	UUUCUGUC C CCAAUCCC	1346	GGGAUUGG CUGAUGAG	GCCGUUAGGC	CGAA IACAGAAA	8746
2905	UUCUGUCC C CAAUCCCC	1347	GGGGAUUG CUGAUGAG	GCCGUUAGGC	CGAA IGACAGAA	8747
2906	UCUGUCCC C AAUCCCCU	1348	AGGGGAU CUGAUGAG	GCCGUUAGGC	CGAA IGGACAGA	8748
2907	CUGUCCCC A AUCCCCUG	1349	CAGGGGAU CUGAUGAG	GCCGUUAGGC	CGAA IGGACAG	8749
2911	CCCCAAUC C CCUGGGAU	1350	AUCCAGG CUGAUGAG	GCCGUUAGGC	CGAA IAUUGGGG	8750
2912	CCCCAAUC C CUGGGAU	1351	AAUCCAG CUGAUGAG	GCCGUUAGGC	CGAA IGAUUGGG	8751
2913	CCAAUCCC C UGGGAUUC	1352	GAAUCCCA CUGAUGAG	GCCGUUAGGC	CGAA IGGAUUGG	8752
2914	CAAUCCCC U GGGAUUCU	1353	AGAAUCCC CUGAUGAG	GCCGUUAGGC	CGAA IGGAUUG	8753
2922	UGGGAUUC U UCCCCGAU	1354	AUCGGGGA CUGAUGAG	GCCGUUAGGC	CGAA IAAUCCCA	8754
2925	GAUUCUUC C CCGAUCAU	1355	AUGAUCGG CUGAUGAG	GCCGUUAGGC	CGAA IAAGAAUC	8755
2926	AUUCUUC C CGAUCAUC	1356	GAUGAUCG CUGAUGAG	GCCGUUAGGC	CGAA IGAAGAAU	8756
2927	UUCUCCCC C GAUCAUCA	1357	UGAUGAUC CUGAUGAG	GCCGUUAGGC	CGAA IGGAGAA	8757
2932	CCCCGAUC A UCAGUUGG	1358	CCAACUGA CUGAUGAG	GCCGUUAGGC	CGAA IAUCGGGG	8758
2935	CGAUCAUC A GUUGGACC	1359	GGUCCAAC CUGAUGAG	GCCGUUAGGC	CGAA IAUGAUCG	8759

2943	AGUUGGAC C CUGCAUUC	1360	GAAUGCAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCAACU	8760
2944	GUUGGACC C UGCAUUC	1361	UGAAUGCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCCAAC	8761
2945	UUGGACCC U GCAUUC	1362	UUGAAUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGUCCAA	8762
2948	GACCCUGC A UUCAAGC	1363	GCUTUGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICAGGGUC	8763
2952	CUGCAUUC A AAGCCAAC	1364	GUUGGCUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAAUGCAG	8764
2957	UUCAAGC C AACUCAGU	1365	ACUGAGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUUUGAA	8765
2958	UCAAGCC A ACUCAGUA	1366	UACUGAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCUUUGA	8766
2961	AAGCCAAC U CAGUAAU	1367	AUUUACUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGGCUU	8767
2963	GCCAACUC A GUAAAUCC	1368	GGAUUUAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUUGGC	8768
2971	AGUAAAU C AGAUUGGG	1369	CCCAAUCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAUUUACU	8769
2972	GUAAAUCC A GAUUGGGA	1370	UCCCAAUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGAUUUAC	8770
2982	AUUGGGAC C UCAACCCG	1371	CGGUUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCCAAU	8771
2983	UUGGGACC U CAACCCGC	1372	GCGGGUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUCCCAA	8772
2985	GGGACCUC A ACCCGCAC	1373	GUGCGGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGUCCC	8773
2988	ACCUCAAC C CGCACAAG	1374	CUUGUGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGAGGU	8774
2989	CCUCAACC C GCACAAGG	1375	CCUUGUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUUGAGG	8775
2992	CAACCCGC A CAAGGACA	1376	UGUCCUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGGUUG	8776
2994	ACCCGCAC A AGGACAAC	1377	GUUGUCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGCGGGU	8777
3000	ACAAGGAC A ACUGGCCG	1378	CGGCCAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCUUGU	8778
3003	AGGACAAC U GGCCGGAC	1379	GUCCGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGUCCU	8779
3007	CAACUGGC C GGACGCCA	1380	UGGCGUCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCAGUUG	8780
3014	CCGGACGC C AACAAGGU	1381	ACCUUGUU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGUCCGG	8781
3015	CGGACGCC A ACAAGGUG	1382	CACCUUGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGGUCCG	8782
3018	ACGCCAAC A AGGUGGGA	1383	UCCCACCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGGCGU	8783
3035	GUGGGAGC A UUCGGGCC	1384	GGCCCGAA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUCCAC	8784
3043	AUUCGGGC C AGGUUCA	1385	UGAACCCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCCGAAU	8785
3044	UUCGGGCC A GGUUCAC	1386	GUGAACCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCCCGAA	8786
3051	CAGGGUUC A CCCUCCC	1387	GGGAGGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAACCCUG	8787
3053	GGGUUCAC C CCUCCCA	1388	UGGGGAGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAACCC	8788
3054	GGUUCACC C CUCCCCAU	1389	AUGGGGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGUGAAC	8789
3055	GUUCACCC C UCCCCAUG	1390	CAUGGGGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGUGAAC	8790
3056	UUCACCCC U CCCCAUGG	1391	CCAUGGGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGUGAA	8791
3058	CACCCUC C CCAUGGGG	1392	CCCCAUGG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGUG	8792
3059	ACCCCUCC C CAUGGGGG	1393	CCCCAUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGGU	8793
3060	CCCCUCC C AUGGGGGA	1394	UCCCCAU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGAGGGG	8794
3061	CCCUCCC A UGGGGGAC	1395	GUCCCCCA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGAGGGG	8795
3070	UGGGGGAC U GUUGGGGU	1396	ACCCCAAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUCCCCCA	8796
3084	GGUGGAGC C CUCACGCU	1397	AGCGUGAG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICUCCACC	8797
3085	GUGGAGCC C UCACGUC	1398	GAGCGUGA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCUCCAC	8798
3086	UGGAGCCC U CACGCUCA	1399	UGAGCGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGGCUCCA	8799
3088	GAGCCUC A CGUCAGG	1400	CCUGAGCG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGGGCUC	8800
3092	CCUCACGC U CAGGGCCU	1401	AGGCCUC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICGUGAGG	8801
3094	UCACGCUC A GGGCCUAC	1402	GUAGGCC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGCGUGA	8802
3099	CUCAGGGC C UACUCACA	1403	UGUGAGUA CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICCUGAG	8803
3100	UCAGGGCC U ACUCACAA	1404	UUGUGAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCCUGA	8804
3103	GGGCCUAC U CACAACUG	1405	CAGUUGUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUAGGCC	8805
3105	GCCUACUC A CAACUGUG	1406	CACAGUUG CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IAGUAGGC	8806
3107	CUACUCAC A ACUGUGCC	1407	GGCAGAGU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUGAGUAG	8807
3110	CUCACAAC U GUGCCAGC	1408	GCUCGCAC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IUUGUGAG	8808
3115	AACUGUGC C AGCAGCUC	1409	GAGCUGCU CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA ICACAGUU	8809
3116	ACUGUGCC A GCAGCUC	1410	GGAGCUGC CUGAUGAG	<u>GCCGUUAGGC</u>	CGAA IGCACAGU	8810

3119	GUGCCAGC A GCUCCUCC	1411	GGAGGAGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICUGGCAC	8811
3122	CCAGCAGC U CCUCCUCC	1412	GGAGGAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICUGCUGG	8812
3124	AGCAGCUC C UCCUCCUG	1413	CAGGAGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGCUGCU	8813
3125	GCAGCUC U CCUCCUGC	1414	GCAGGAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGCUGC	8814
3127	AGCUCUC C UCCUGCCU	1415	AGGCAGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGGAGCU	8815
3128	GCUCCUCC U CCUGCCUC	1416	GAGGCAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGGAGC	8816
3130	UCCUCCUC C UGCCUCCA	1417	UGGAGGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGGAGGA	8817
3131	CCUCCUCC U GCCUCCAC	1418	GUGGAGGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGGAGG	8818
3134	CCUCCUGC C UCCACCAA	1419	UUGGUGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICAGGAGG	8819
3135	CUCUCCUC U CCACCAAU	1420	AUUGGUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCAGGAG	8820
3137	CCUGCCUC C ACCAAUCG	1421	CGAUUGGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGGCAGG	8821
3138	CUGCCUCC A CCAAUCGG	1422	CCGAUUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGGCAG	8822
3140	GCCUCCAC C AAUCGGCA	1423	UGCCGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUGAGGC	8823
3141	CCUCCACC A AUCGGCAG	1424	CUGCCGAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUGGAGG	8824
3148	CAAUCGGC A GUCAGGAA	1425	UUCUGAC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCGAUUG	8825
3152	CGGCAGUC A GGAAGGCA	1426	UGCCUCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IACUGCCG	8826
3160	AGGAAGGC A GCCUACUC	1427	GAGUAGGC CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCUCCU	8827
3163	AAGGCAGC C UACUCCCU	1428	AGGGAGUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICUGCCU	8828
3164	AGGCAGCC U ACUCCCUU	1429	AAGGGAGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCUGCCU	8829
3167	CAGCCUAC U CCCUUAUC	1430	GAUAAGGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUAGGCUG	8830
3169	GCCUACUC C CUUAUCUC	1431	GAGUAAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUAGGC	8831
3170	CCUACUCC C UUAUCUCC	1432	GGAGUAA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGUAGG	8832
3171	CUACUCCC U UAUCUCCA	1433	UGGAGUA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGGAUAG	8833
3176	CCCUUAUC U CCACCUCU	1434	AGAGGUGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAUAGGG	8834
3178	CUUAUCUC C ACCCUAA	1435	UUAGAGGU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUAAG	8835
3179	UUAUCUCC A CCUCUAAG	1436	CUUAGAGG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGAGUAA	8836
3181	AUCUCCAC C UCUAAGGG	1437	CCCUAGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUUGAGAU	8837
3182	UCUCCACC U CUAAGGGA	1438	UCCCUAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGUGGAGA	8838
3184	UCCACCUC U AAGGGACA	1439	UGUCCCU CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGGUGGA	8839
3192	UAAGGGAC A CUCAUCCU	1440	AGGAUGAG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUCCCUA	8840
3194	AGGGACAC U CAUCCUCA	1441	UGAGGAUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IUGUCCU	8841
3196	GGACACUC A UCCUCAGG	1442	CCUGAGGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUGUCC	8842
3199	CACUCAUC C UCAGGCCA	1443	UGGCCUGA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUGUG	8843
3200	ACUCAUCC U CAGGCCAU	1444	AUGGCCUG CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGUGAGU	8844
3202	UCAUCCUC A GGCAUGC	1445	GCAUGGCC CUGAUGAG <u>GCCGUUAGGC</u> CGAA IAGGAUGA	8845
3206	CCUCAGGC C AUGCAGUG	1446	CACUGCAU CUGAUGAG <u>GCCGUUAGGC</u> CGAA ICCUGAGG	8846
3207	CUCAGGCC A UGCAGUGG	1447	CCACUGCA CUGAUGAG <u>GCCGUUAGGC</u> CGAA IGCCUGAG	8847

Input Sequence = AF100308. Cut Site = CH/.

Stem Length = 8. Core Sequence = CUGAUGAG X CGAA (X = GCCGUUAGGC or other stem II)

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

Underlined region can be any X sequence or linker, as described herein.

"I" stands for Inosine



TABLE VII: HUMAN HBV G-CLEAVER AND SUBSTRATE SEQUENCE

Pos	Substrate	Seq ID	G-cleaver	Seq ID
61	ACUUUCCU G CUGGUGGC	1448	GCCACCAG UGAUG GCAUGCACUAUGC GCG AGGAAAGU	8848
87	GGAACAGU G AGCCCUGC	1449	GCAGGGCU UGAUG GCAUGCACUAUGC GCG ACUGUUCC	8849
94	UGAGCCCU G CUCAGAAU	1450	AUUCUGAG UGAUG GCAUGCACUAUGC GCG AGGGCUCA	8850
112	CUGUCUCU G CCAUAUCG	1451	CGAUUAGG UGAUG GCAUGCACUAUGC GCG AGAGACAG	8851
132	AUCUUAUC G AAGACUGG	1452	CCAGUCUU UGAUG GCAUGCACUAUGC GCG GAUAAGAU	8852
153	CCUGUACC G AACAUUGA	1453	UCCAUGUU UGAUG GCAUGCACUAUGC GCG GGUACAGG	8853
169	AGAAACUC G CAUCAGGA	1454	UCCUGAUG UGAUG GCAUGCACUAUGC GCG GAUGUUCU	8854
192	GGACCCCU G CUCGUGUU	1455	AACACGAG UGAUG GCAUGCACUAUGC GCG AGGGGUCC	8855
222	UUCUUGUU G AAAAAAU	1456	AUUUUUGU UGAUG GCAUGCACUAUGC GCG AACAGAA	8856
315	CAAAAUUC G CAGUCCCA	1457	UGGGACUG UGAUG GCAUGCACUAUGC GCG GAAUUUUG	8857
374	UGGUUAUC G CUGGAUGU	1458	ACAUCCAG UGAUG GCAUGCACUAUGC GCG GAUAACCA	8858
387	AJGUGUCU G CGGCGUUU	1459	AAACGCCG UGAUG GCAUGCACUAUGC GCG AGACACAU	8859
410	CUUCCUCU G CAUCCUGC	1460	CGAGGAUG UGAUG GCAUGCACUAUGC GCG AGAGGAAG	8860
417	UGCAUCCU G CUGCUAUG	1461	CAUAGCAG UGAUG GCAUGCACUAUGC GCG AGGAUGCA	8861
420	AUCCUGCU G CUAUGCCU	1462	AGGCAUAG UGAUG GCAUGCACUAUGC GCG AGCAGAU	8862
425	GCUGCUAU G CCUCAUCU	1463	AGAUGAGG UGAUG GCAUGCACUAUGC GCG AUAGCAGC	8863
468	GGUAUGUU G CCCGUUUG	1464	CAAACGGG UGAUG GCAUGCACUAUGC GCG AACAUACC	8864
518	CGGACCAU G CAAAACCU	1465	AGGUUUUG UGAUG GCAUGCACUAUGC GCG AUGGUCCG	8865
527	CAAAACCU G CACAACUC	1466	GAGUUGUG UGAUG GCAUGCACUAUGC GCG AGGUUUUG	8866
538	CAACUCCU G CUCAAGGA	1467	UCCUUGAG UGAUG GCAUGCACUAUGC GCG AGGAGUUG	8867
569	CUCAUGUU G CUGUACAA	1468	UUGUACAG UGAUG GCAUGCACUAUGC GCG AACAUAGAG	8868
596	CGGAAACU G CACCUGUA	1469	UACAGGUG UGAUG GCAUGCACUAUGC GCG AGUUUCCG	8869
631	GGGCUUUC G CAAAUAUC	1470	GUUUUUUG UGAUG GCAUGCACUAUGC GCG GAAAGCCC	8870
687	UUACUAGU G CCAUUUGU	1471	ACAAUUGG UGAUG GCAUGCACUAUGC GCG ACUAGUAA	8871
747	AUAUGGAU G AUGUGGUU	1472	AACCACAU UGAUG GCAUGCACUAUGC GCG AUCCAUAU	8872
783	AACAUCUU G AGUCCCUU	1473	AAGGGACU UGAUG GCAUGCACUAUGC GCG AAGAUUUU	8873
795	CCCUUUUAU G CCGCUGUU	1474	AACAGCGG UGAUG GCAUGCACUAUGC GCG AUAAAGGG	8874
798	UUUAUGCC G CUGUUACC	1475	GGUAAACAG UGAUG GCAUGCACUAUGC GCG GGCAUAAA	8875
911	GGCACAUU G CCACAGGA	1476	UCCUGUGG UGAUG GCAUGCACUAUGC GCG AAUGUGCC	8876
978	GGCCUAUU G AUUGGAAA	1477	UUUCCAAU UGAUG GCAUGCACUAUGC GCG AAUAGGCC	8877
997	AUGUCAAC G AAUUGUGG	1478	CCACAAUU UGAUG GCAUGCACUAUGC GCG GUUGACAU	8878
1020	UGGGGUUU G CCGCCCUU	1479	AGGGGCGG UGAUG GCAUGCACUAUGC GCG AAACCCCA	8879
1023	GGUUUGCC G CCCCUIUC	1480	GAAAGGGG UGAUG GCAUGCACUAUGC GCG GGCAAACC	8880
1034	CCUUUCAC G CAAUGUGG	1481	CCACAUUG UGAUG GCAUGCACUAUGC GCG GUGAAAGG	8881
1050	GAUAUUCU G CUUUAAUG	1482	CAUUAAAG UGAUG GCAUGCACUAUGC GCG AGAAUAUC	8882
1058	GUUUAAU G CCUUUAUA	1483	UAUAAAGG UGAUG GCAUGCACUAUGC GCG AUUAAGG	8883
1068	CUUUUAU G CAUGCAUA	1484	UAUGCAUG UGAUG GCAUGCACUAUGC GCG AUUAAGG	8884
1072	AUAUGCAU G CAUACAAG	1485	CUUGUAUG UGAUG GCAUGCACUAUGC GCG AUGCAUAU	8885
1103	ACUUUCUC G CCAACUUA	1486	UAAGUUGG UGAUG GCAUGCACUAUGC GCG GAGAAAGU	8886
1139	CAGUAUGU G AACCUIUA	1487	UAAAGGUU UGAUG GCAUGCACUAUGC GCG ACAUACUG	8887
1155	ACCCCGUU G CUCGGCAA	1488	UUGCCGAG UGAUG GCAUGCACUAUGC GCG AACGGGGU	8888
1177	UGGUCUAU G CCAAGUGU	1489	ACACUUGG UGAUG GCAUGCACUAUGC GCG AUAGACCA	8889
1188	AAGUGUUU G CUGACGCA	1490	UGCUGCAG UGAUG GCAUGCACUAUGC GCG AAACACUU	8890
1191	UGUUUGCU G ACGCAACC	1491	GGUUGCGU UGAUG GCAUGCACUAUGC GCG AGCAAACA	8891
1194	UUGCUGAC G CAACCCCC	1492	GGGGGUUG UGAUG GCAUGCACUAUGC GCG GUCAGCAA	8892
1234	CCAUCAGC G CAUGCGUG	1493	CACGCAUG UGAUG GCAUGCACUAUGC GCG GCUGAUGG	8893
1238	CAGCGCAU G CGUGGAAC	1494	GUUCCACG UGAUG GCAUGCACUAUGC GCG AUGCGCUG	8894



1262	UCUCCUCU G CCGAUCCA	1495	UGGAUCGG UGAUG GCAUGCACUAUGC GCG AGAGGAGA	8895
1265	CCUCUGCC G AUCCAUAAC	1496	GU AUGGAU UGAUG GCAUGCACUAUGC GCG GGCAGAGG	8896
1275	UCCAUAACC G CGGAACUC	1497	GAGUUCGG UGAUG GCAUGCACUAUGC GCG GGU AUGGA	8897
1290	UCCUAGCC G CUUGUUUU	1498	AAAACAAG UGAUG GCAUGCACUAUGC GCG GGCUAGGA	8898
1299	CUUGUUUU G CUCGCAGC	1499	GCUGCGAG UGAUG GCAUGCACUAUGC GCG AAAACAAG	8899
1303	UUUUGCUC G CAGCAGGU	1500	ACCUGCUG UGAUG GCAUGCACUAUGC GCG GAGCAAAA	8900
1335	UCGGGACU G ACAAUUCU	1501	AGAAUUGU UGAUG GCAUGCACUAUGC GCG AGUCCCGA	8901
1349	UCUGUCGU G CUCUCCCG	1502	CGGGAGAG UGAUG GCAUGCACUAUGC GCG ACGACAGA	8902
1357	GCUCUCCC G CAAAUUAU	1503	UAUAUUUG UGAUG GCAUGCACUAUGC GCG GGGAGAGC	8903
1382	CCAUGGCU G CUAGGCUG	1504	CAGCCUAG UGAUG GCAUGCACUAUGC GCG AGCCAUGG	8904
1392	UAGGCUGU G CUGCCAAC	1505	GUUGGCAG UGAUG GCAUGCACUAUGC GCG ACAGCCUA	8905
1395	GCUGUGCU G CCAACUGG	1506	CCAGUUGG UGAUG GCAUGCACUAUGC GCG ACAGCAGC	8906
1411	GAUCCUAC G CGGACGU	1507	ACGUCCCG UGAUG GCAUGCACUAUGC GCG GUAGGAUC	8907
1442	CCGUCGGC G CUGAAUCC	1508	GGAUUCAG UGAUG GCAUGCACUAUGC GCG GCCGACGG	8908
1445	UCGGCGCU G AAUCCCGC	1509	GCGGGAUU UGAUG GCAUGCACUAUGC GCG AGCGCCGA	8909
1452	UGAAUCCC G CGGACGAC	1510	GUCGUCCG UGAUG GCAUGCACUAUGC GCG GGGAUUCA	8910
1458	CCGCGGAC G ACCCCUCC	1511	GGAGGGGU UGAUG GCAUGCACUAUGC GCG GUCCGCGG	8911
1474	CCGGGGCC G CUUGGGGC	1512	GCCCCAAG UGAUG GCAUGCACUAUGC GCG GGCCCCGG	8912
1489	GCUCUACC G CCCGCUUC	1513	GAAGCGGG UGAUG GCAUGCACUAUGC GCG GGUAGAGC	8913
1493	UACCGCCC G CUUCUCCG	1514	CGGAGAAG UGAUG GCAUGCACUAUGC GCG GGGCGGUA	8914
1501	GCUCUCC G CCUAUUGU	1515	ACAAUAGG UGAUG GCAUGCACUAUGC GCG GGAGAAGC	8915
1513	AUUGUACC G ACCGUCCA	1516	UGGACGGU UGAUG GCAUGCACUAUGC GCG GGUACAAU	8916
1528	CACGGGGC G CACCUCUC	1517	GAGAGGUG UGAUG GCAUGCACUAUGC GCG GCCCCGUG	8917
1542	CUCUUUAC G CGGACUCC	1518	GGAGUCCG UGAUG GCAUGCACUAUGC GCG GUAAAGAG	8918
1559	CCGUCUGU G CCUUCUCA	1519	UGAGAAGG UGAUG GCAUGCACUAUGC GCG ACAGACGG	8919
1571	UCUCAUCU G CCGGACCG	1520	CGGUCCGG UGAUG GCAUGCACUAUGC GCG AGAUGAGA	8920
1583	GACCGUGU G CACUUCGC	1521	GCGAAGUG UGAUG GCAUGCACUAUGC GCG ACACGGUC	8921
1590	UGCACUUC G CUUCACCU	1522	AGGUGAAG UGAUG GCAUGCACUAUGC GCG GAAGUGCA	8922
1601	UCACCUCU G CACGUCGC	1523	GCGACGUG UGAUG GCAUGCACUAUGC GCG AGAGGUGA	8923
1608	UGCACGUC G CAUGGAGA	1524	UCUCCAUG UGAUG GCAUGCACUAUGC GCG GACGUGCA	8924
1624	ACCACCGU G AACGCCCA	1525	UGGGCGUU UGAUG GCAUGCACUAUGC GCG ACGGUGGU	8925
1628	CCGUGAAC G CCCACAGG	1526	CCUGUGGG UGAUG GCAUGCACUAUGC GCG GUUCACGG	8926
1642	AGGAACCU G CCCAAGGU	1527	ACCUUGGG UGAUG GCAUGCACUAUGC GCG AGGUUCCU	8927
1654	AAGGUCUU G CAUAAGAG	1528	CUCUUUUG UGAUG GCAUGCACUAUGC GCG AGAGCCUU	8928
1690	AUGUCAAC G ACCGACCU	1529	AGGUCGGU UGAUG GCAUGCACUAUGC GCG GUUGACAU	8929
1694	CAACGACC G ACCUUGAG	1530	CUCAAGGU UGAUG GCAUGCACUAUGC GCG GGUCGUUG	8930
1700	CCGACCUU G AGGCAUAC	1531	GU AUGCCU UGAUG GCAUGCACUAUGC GCG AAGGUCGG	8931
1730	UGUUUAAU G AGUGGGAG	1532	CUCCACAU UGAUG GCAUGCACUAUGC GCG AUUAAACA	8932
1818	AGCACCAU G CAACUUUU	1533	AAAAGUUG UGAUG GCAUGCACUAUGC GCG AUGGUGCU	8933
1835	UCACCUCU G CCUAAUCA	1534	UGAUUAGG UGAUG GCAUGCACUAUGC GCG AGAGGUGA	8934
1883	CAAGCUGU G CCUUGGGU	1535	ACCCAAGG UGAUG GCAUGCACUAUGC GCG ACAGCUUG	8935
1912	UGGACAUU G ACCCGUAU	1536	AUACGGGU UGAUG GCAUGCACUAUGC GCG AAUGUCCA	8936
1959	UCUUUUUU G CCUUCUGA	1537	UCAGAAGG UGAUG GCAUGCACUAUGC GCG AAAAAAGA	8937
1966	UGCCUUCU G ACUUCUUU	1538	AAAGAAGU UGAUG GCAUGCACUAUGC GCG AGAAGGCA	8938
1985	UUCUAUUC G AGAUCUCC	1539	GGAGAUCU UGAUG GCAUGCACUAUGC GCG GAAUAGAA	8939
1996	AUCUCCUC G ACACCGCC	1540	GGCGGUGU UGAUG GCAUGCACUAUGC GCG GAGGAGAU	8940
2002	UCGACACC G CCUCUGCU	1541	AGCAGAGG UGAUG GCAUGCACUAUGC GCG GGUGUCGA	8941
2008	CCGCCUCU G CUCUGUAU	1542	AUACAGAG UGAUG GCAUGCACUAUGC GCG AGAGGCGG	8942
2092	GUUGGGGU G AGUUGAUG	1543	CAUCAACU UGAUG GCAUGCACUAUGC GCG ACCCCAAC	8943
2097	GGUGAGUU G AUGAAUCU	1544	AGAUUCAU UGAUG GCAUGCACUAUGC GCG AACUCACC	8944
2100	GAGUUGAU G AAUCUAGC	1545	GCUAGAUU UGAUG GCAUGCACUAUGC GCG AUCAACUC	8945

2237	UUUUGGGC G AGAAACUG	1546	CAGUUUCU UGAUG GCAUGCACUAUGC GCG GCCCAAAA	8946
2251	CUGUUCUU G AAUAUUUG	1547	CAAAUAUU UGAUG GCAUGCACUAUGC GCG AAGAACAG	8947
2282	GUGGAUUC G CACUCCUC	1548	GAGGAGUG UGAUG GCAUGCACUAUGC GCG GAAUCCAC	8948
2293	CUCCUCCU G CAUAUAGA	1549	UCUAUAUG UGAUG GCAUGCACUAUGC GCG AGGAGGAG	8949
2311	CACCAAAU G CCCCUAUC	1550	GAUAGGGG UGAUG GCAUGCACUAUGC GCG AUUUGGUG	8950
2354	UGUUAGAC G AAGAGGCA	1551	UGCCUCUU UGAUG GCAUGCACUAUGC GCG GUCUAACA	8951
2388	ACUCCUC G CCUCGCAG	1552	CUGCGAGG UGAUG GCAUGCACUAUGC GCG GAGGGAGU	8952
2393	CUCGCCUC G CAGACGAA	1553	UUCGUCUG UGAUG GCAUGCACUAUGC GCG GAGGCGAG	8953
2399	UCGCAGAC G AAGGUCUC	1554	GAGACUUU UGAUG GCAUGCACUAUGC GCG GUCUGCGA	8954
2412	UCUCAAU G CCGCGUCG	1555	CGACGCGG UGAUG GCAUGCACUAUGC GCG GAUUGAGA	8955
2415	CAAUCGCC G CGUCGCAG	1556	CUGCGACG UGAUG GCAUGCACUAUGC GCG GGCGAUUG	8956
2420	GCCGCGUC G CAGAAGAU	1557	AUCUUCUG UGAUG GCAUGCACUAUGC GCG GACGCGGC	8957
2514	GGUACCUU G CUUUAUUC	1558	GAUUAAG UGAUG GCAUGCACUAUGC GCG AAGGUACC	8958
2549	CUUUUCCU G ACAUUCAU	1559	AUGAAUGU UGAUG GCAUGCACUAUGC GCG AGGAAAAG	8959
2560	AUUCAUUU G CAGGAGGA	1560	UCCUCCUG UGAUG GCAUGCACUAUGC GCG AAUUGAAU	8960
2576	ACAUUGUU G AUAGAUGU	1561	ACAUCUUA UGAUG GCAUGCACUAUGC GCG AACAAUGU	8961
2615	CAGUAAAU G AAAACAGG	1562	CCUGUUUU UGAUG GCAUGCACUAUGC GCG AUUUACUG	8962
2641	UUAACUUA G CCUGCUAG	1563	CUAGCAGG UGAUG GCAUGCACUAUGC GCG AUAGUUA	8963
2645	CUAUGCCU G CUAGGUUU	1564	AAACCUAG UGAUG GCAUGCACUAUGC GCG AGGCAUAG	8964
2677	AAAUUUUU G CCCUAGA	1565	UCUAAGGG UGAUG GCAUGCACUAUGC GCG AAUAUUUU	8965
2740	UUCGAGAC G CGACAUUA	1566	UAAUGUCG UGAUG GCAUGCACUAUGC GCG GUCUGGAA	8966
2742	CCAGACGC G ACAUUAUU	1567	AAUAAUGU UGAUG GCAUGCACUAUGC GCG GCGUCUGG	8967
2804	CACGUAGC G CCUCAUUU	1568	AAAUGAGG UGAUG GCAUGCACUAUGC GCG GCUACGUG	8968
2814	CUCAUUUU G CGGGUCAC	1569	GUGACCCG UGAUG GCAUGCACUAUGC GCG AAAAUGAG	8969
2875	CAAACCUC G AAAAGGCA	1570	UGCCUUUU UGAUG GCAUGCACUAUGC GCG GAGGUUUG	8970
2928	UCUCCCC G AUCAUCAG	1571	CUGAUGAU UGAUG GCAUGCACUAUGC GCG GGGGAAGA	8971
2946	UGGACCCU G CAUUCAAA	1572	UUUGAAUG UGAUG GCAUGCACUAUGC GCG AGGGUCCA	8972
2990	CUCAACCC G CCAACGA	1573	UCCUUGUG UGAUG GCAUGCACUAUGC GCG GGGUUGAG	8973
3012	GGCCGGAC G CCAACAAG	1574	CUUGUUGG UGAUG GCAUGCACUAUGC GCG GUCCGGCC	8974
3090	GCCCUAC G CUCAGGCG	1575	GCCUCGAG UGAUG GCAUGCACUAUGC GCG GUGAGGGC	8975
3113	ACAACUGU G CCAGCAGC	1576	GCUGCUGG UGAUG GCAUGCACUAUGC GCG ACAGUUGU	8976
3132	CUCCUCCU G CCUCCACC	1577	GGUGGAGG UGAUG GCAUGCACUAUGC GCG AGGAGGAG	8977
51	AGGGCCCU G UACUUUCC	1578	GGAAAGUA UGAUG GCAUGCACUAUGC GCG AGGGCCCU	8978
106	AGAAUACU G UCUCUGCC	1579	GGCAGAGA UGAUG GCAUGCACUAUGC GCG AGUUAUCU	8979
148	GGGACCCU G UACCGAAC	1580	GUUCGGUA UGAUG GCAUGCACUAUGC GCG AGGGUCCC	8980
198	CUGCUCGU G UUACAGGC	1581	GCCUGUAA UGAUG GCAUGCACUAUGC GCG ACAGGAGC	8981
219	UUUUUCUU G UUGACAAA	1582	UUUGUCAA UGAUG GCAUGCACUAUGC GCG AAGAAAAA	8982
297	ACACCGGU G UGUCUUGG	1583	CCAAGACA UGAUG GCAUGCACUAUGC GCG ACGGGUGU	8983
299	ACCCGUGU G UCUGGCC	1584	GGCCAAGA UGAUG GCAUGCACUAUGC GCG ACACGGGU	8984
347	ACCAACCU G UUGUCCUC	1585	GAGGACAA UGAUG GCAUGCACUAUGC GCG AGGUUGGU	8985
350	AACCUUUU G UCCUCCAA	1586	UUGGAGGA UGAUG GCAUGCACUAUGC GCG AACAGGUU	8986
362	UCCAAUUU G UCCUGGUU	1587	AACCAGGA UGAUG GCAUGCACUAUGC GCG AAUUGGA	8987
381	CGCUGGAU G UGUCUGCG	1588	CGCAGACA UGAUG GCAUGCACUAUGC GCG AUCCAGCG	8988
383	CUGGAUGU G UCUGCGGC	1589	GCCGCAGA UGAUG GCAUGCACUAUGC GCG ACAUCCAG	8989
438	AUCUUCUU G UUGGUUCU	1590	AGAACCAA UGAUG GCAUGCACUAUGC GCG AAGAAGAU	8990
465	CAAGGUUU G UUGCCCGU	1591	ACGGGCAA UGAUG GCAUGCACUAUGC GCG AUACCUUG	8991
476	GCCCGUUU G UCCUCUAA	1592	UUAGAGGA UGAUG GCAUGCACUAUGC GCG AAACGGGC	8992
555	ACCUCUUA G UUUCCUC	1593	GAGGGAAA UGAUG GCAUGCACUAUGC GCG AUAGAGGU	8993
566	UCCCUCAU G UUGCUGUA	1594	UACAGCAA UGAUG GCAUGCACUAUGC GCG AUGAGGGA	8994
572	AUGUUGCU G UACAAAAC	1595	GUUUUGUA UGAUG GCAUGCACUAUGC GCG AGCAACAU	8995
602	CUGCACCU G UAUUCCCA	1596	UGGAAUA UGAUG GCAUGCACUAUGC GCG AGGUGCAG	8996

694	UGCCAUUU G UUCAGUGG	1597	CCACUGAA UGAUG GCAUGCACUAUGC GCG AAAUGGCA	8997
724	CCCCCACU G UCUGGCUU	1598	AAGCCAGA UGAUG GCAUGCACUAUGC GCG AGUGGGGG	8998
750	UGGAUGAU G UGGUUUUG	1599	CAAAACCA UGAUG GCAUGCACUAUGC GCG AUCAUCCA	8999
771	CCAAGUCU G UACAACAU	1600	AUGUUGUA UGAUG GCAUGCACUAUGC GCG AGACUUGG	9000
801	AUGCCGCU G UUACCAAU	1601	AUUGGUAA UGAUG GCAUGCACUAUGC GCG AGCGGCAU	9001
818	UUUCUUUU G UCUUUGGG	1602	CCCAAAGA UGAUG GCAUGCACUAUGC GCG AAAAGAAA	9002
888	UGGGAUUAU G UAAUUGGG	1603	CCCAAUUA UGAUG GCAUGCACUAUGC GCG AUAUCCCA	9003
927	AACAUAAU G UACAAAAA	1604	UUUUUGUA UGAUG GCAUGCACUAUGC GCG AAUAUGUU	9004
944	AUCAAUAU G UGUUUUAG	1605	CUAAAAACA UGAUG GCAUGCACUAUGC GCG AUUUUGAU	9005
946	CAAAAUGU G UUUUAGGA	1606	UCCUAAAA UGAUG GCAUGCACUAUGC GCG ACAUUUUG	9006
963	AACUCCU G UAAACAGG	1607	CCUGUUUA UGAUG GCAUGCACUAUGC GCG AGGAAGUU	9007
991	GAAAGUAU G UCAACGAA	1608	UUCGUUGA UGAUG GCAUGCACUAUGC GCG AUACUUUC	9008
1002	AACGAAU G UGGGUCUU	1609	AAGACCCA UGAUG GCAUGCACUAUGC GCG AAUUCGUU	9009
1039	CACGCAU G UGGAUAU	1610	AAUAUCCA UGAUG GCAUGCACUAUGC GCG AUUGCGUG	9010
1137	AACAGUAU G UGAACCUU	1611	AAGGUUCA UGAUG GCAUGCACUAUGC GCG AUACUGUU	9011
1184	UGCCAAGU G UUUGCUGA	1612	UCAGCAA UGAUG GCAUGCACUAUGC GCG ACUUGGCA	9012
1251	GAACUUU G UGUCUCCU	1613	AGGAGACA UGAUG GCAUGCACUAUGC GCG AAAGGUUC	9013
1253	ACCUUUGU G UCUCUCCU	1614	AGAGGAGA UGAUG GCAUGCACUAUGC GCG ACAAGGU	9014
1294	AGCCGCUU G UUUUGCUC	1615	GAGCAAAA UGAUG GCAUGCACUAUGC GCG AAGCGGCU	9015
1344	ACAAUUCU G UCGUGCUC	1616	GAGCACGA UGAUG GCAUGCACUAUGC GCG AGAAUUGU	9016
1390	GCUAGGCU G UGCUGCCA	1617	UGGCAGCA UGAUG GCAUGCACUAUGC GCG AGCCUAGC	9017
1425	CGUCCUUU G UUUACGUC	1618	GACGUAAA UGAUG GCAUGCACUAUGC GCG AAAGGACG	9018
1508	CGCCUAU G UACCGACC	1619	GGUCGGUA UGAUG GCAUGCACUAUGC GCG AAUAGGCG	9019
1557	CCCCGUCU G UGCCUUCU	1620	AGAAGGCA UGAUG GCAUGCACUAUGC GCG AGACGGGG	9020
1581	CGGACCGU G UGCACUUC	1621	GAAGUGCA UGAUG GCAUGCACUAUGC GCG ACGGUCCG	9021
1684	UCAGCAU G UCAACGAC	1622	GUCGUUGA UGAUG GCAUGCACUAUGC GCG AUUGCUGA	9022
1719	CAAAGACU G UGUGUUUA	1623	UAAACACA UGAUG GCAUGCACUAUGC GCG AGUCUUUG	9023
1721	AAGACUGU G UGUUUAAU	1624	AUUAACA UGAUG GCAUGCACUAUGC GCG ACAGUCUU	9024
1723	GACUGUGU G UUUAAUGA	1625	UCAUAAA UGAUG GCAUGCACUAUGC GCG ACACAGUC	9025
1772	AGGUCUUU G UACUAGGA	1626	UCCUAGUA UGAUG GCAUGCACUAUGC GCG AAAGACCU	9026
1785	AGGAGGCU G UAGGCAUA	1627	UAUGCCUA UGAUG GCAUGCACUAUGC GCG AGCCUCCU	9027
1801	AAAUUGGU G UGUUCACC	1628	GGUGAACA UGAUG GCAUGCACUAUGC GCG ACCAAUUU	9028
1803	AUUGGUGU G UUCACCAG	1629	CUGGUGAA UGAUG GCAUGCACUAUGC GCG ACACCAAU	9029
1850	CAUCUCAU G UUCAUGUC	1630	GACAUGAA UGAUG GCAUGCACUAUGC GCG AUGAGAUG	9030
1856	AUGUUCAU G UCCUACUG	1631	CAGUAGGA UGAUG GCAUGCACUAUGC GCG AUGAACAU	9031
1864	GUCCUACU G UUCAAGCC	1632	GGCUUGAA UGAUG GCAUGCACUAUGC GCG AGUAGGAC	9032
1881	UCCAAGCU G UGCCUUGG	1633	CCAAGGCA UGAUG GCAUGCACUAUGC GCG AGCUUGGA	9033
1939	GAGCUUCU G UGGAGUUA	1634	UAAUCUCA UGAUG GCAUGCACUAUGC GCG AGAAGCUC	9034
2013	UCUGCUCU G UAUCGGGG	1635	CCCCGAUA UGAUG GCAUGCACUAUGC GCG AGAGCAGA	9035
2045	GGAACAUAU G UUCACCUC	1636	GAGGUGAA UGAUG GCAUGCACUAUGC GCG AAUGUCC	9036
2082	GCUAUUCU G UGUUGGGG	1637	CCCCAACA UGAUG GCAUGCACUAUGC GCG AGAAUAGC	9037
2084	UAUUCUGU G UUGGGGUG	1638	CACCCCAA UGAUG GCAUGCACUAUGC GCG ACAGAAUA	9038
2167	UCAGCUAU G UCAACGUU	1639	AACGUUGA UGAUG GCAUGCACUAUGC GCG AUAGCUGA	9039
2205	CAACUAU G UGGUUUCA	1640	UGAAACCA UGAUG GCAUGCACUAUGC GCG AAUAGUUG	9040
2222	CAUUCU G UCUUACUU	1641	AAGUAAGA UGAUG GCAUGCACUAUGC GCG AGGAAAUG	9041
2245	GAGAAACU G UUCUUGAA	1642	UUCAAGAA UGAUG GCAUGCACUAUGC GCG AGUUCUC	9042
2262	UAUUGGU G UCUUUUGG	1643	CCAAAAGA UGAUG GCAUGCACUAUGC GCG ACCAAAUA	9043
2274	UUUGGAGU G UGGAUUCG	1644	CGAAUCCA UGAUG GCAUGCACUAUGC GCG ACUCCAAA	9044
2344	AAACUACU G UUGUUAGA	1645	UCUAACAA UGAUG GCAUGCACUAUGC GCG AGUAGUUU	9045
2347	CUACUGUU G UUAGACGA	1646	UCGUCUAA UGAUG GCAUGCACUAUGC GCG AACAGUAG	9046
2450	AUCUCAU G UUAGUAU	1647	AAUACUAA UGAUG GCAUGCACUAUGC GCG AUUGAGAU	9047

2573	AGGACAUU G UUGAUAGA	1648	UCUAUCAA UGAUG GCAUGCACUAUGC GCG AAUGUCCU	9048
2583	UGAUAGAU G UAAGCAAU	1649	AUUGCUUA UGAUG GCAUGCACUAUGC GCG AUCUAUCA	9049
2594	AGCAAUUU G UGGGGCCC	1650	GGGCCCCA UGAUG GCAUGCACUAUGC GCG AAAUUGCU	9050
2663	AUCCCAAU G UUACUAAA	1651	UUUAGUAA UGAUG GCAUGCACUAUGC GCG AUUGGGAU	9051
2717	CAGAGUAA G UAGUUAAU	1652	AUUAACTA UGAUG GCAUGCACUAUGC GCG AUACUCUG	9052
2901	AUCUUUCU G UCCCCAAU	1653	AUUGGGGA UGAUG GCAUGCACUAUGC GCG AGAAAGAU	9053
3071	GGGGGACU G UUGGGGUG	1654	CACCCCAA UGAUG GCAUGCACUAUGC GCG AGUCCCCC	9054
3111	UCACAACU G UGCCAGCA	1655	UGCUGGCA UGAUG GCAUGCACUAUGC GCG AGUUGUGA	9055

Input Sequence = AF100308. Cut Site = YG/M or UG/U.

Stem Length = 8. Core Sequence = UGAUG GCAUGCACUAUGC GCG

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

TABLE VIII: HUMAN HBV ZINZYME AND SUBSTRATE SEQUENCE

Pos	Substrate	Seq ID	Zinzyne	Seq ID
61	ACUUUCCU G CUGGUGGC	1448	GCCACCAG GCcgaagGCGaGuCaaGGuCu AGGAAAGU	9056
94	UGAGCCCU G CUCAGAAU	1450	AUUCUGAG GCcgaagGCGaGuCaaGGuCu AGGGUCUA	9057
112	CUGUCUCU G CCAUAUCG	1451	CGAUAUGG GCcgaagGCGaGuCaaGGuCu AGAGACAG	9058
169	AGAACAUC G CAUCAGGA	1454	UCCUGAUG GCcgaagGCGaGuCaaGGuCu GAUGUUCU	9059
192	GGACCCCU G CUCGUGUU	1455	AACACGAG GCcgaagGCGaGuCaaGGuCu AGGGGUCC	9060
315	CAAAAUUC G CAGUCCCA	1457	UGGGACUG GCcgaagGCGaGuCaaGGuCu GAAUUUUG	9061
374	UGGUUAUC G CUGGAUGU	1458	ACAUCAG GCcgaagGCGaGuCaaGGuCu GAUAACCA	9062
387	AUGUGUCU G CGGCGUUU	1459	AAACGCCG GCcgaagGCGaGuCaaGGuCu AGACACAU	9063
410	CUUCCUCU G CAUCCUGC	1460	GCAGGAUG GCcgaagGCGaGuCaaGGuCu AGAGGAAG	9064
417	UGCAUCCU G CUGCUAUG	1461	CAUAGCAG GCcgaagGCGaGuCaaGGuCu AGGAUGCA	9065
420	AUCCUGCU G CUUAGCCU	1462	AGGCAUAG GCcgaagGCGaGuCaaGGuCu AGCAGGAU	9066
425	GCUGCUAU G CCUCAUCU	1463	AGAUGAGG GCcgaagGCGaGuCaaGGuCu AUAGCAGC	9067
468	GGUAUGUU G CCCGUUUG	1464	CAAACGGG GCcgaagGCGaGuCaaGGuCu AACAUACC	9068
518	CGGACCAU G CAAAACCU	1465	AGGUUUUG GCcgaagGCGaGuCaaGGuCu AUGGUCCG	9069
527	CAAAACCU G CACAACUC	1466	GAGUUGUG GCcgaagGCGaGuCaaGGuCu AGGUUUUG	9070
538	CAACUCCU G CUCAAGGA	1467	UCCUUGAG GCcgaagGCGaGuCaaGGuCu AGGAGUUG	9071
569	CUCAUGUU G CUGUACAA	1468	UUGUACAG GCcgaagGCGaGuCaaGGuCu AACAUAG	9072
596	CGGAAACU G CACUGUA	1469	UACAGGUG GCcgaagGCGaGuCaaGGuCu AGUUUCCG	9073
631	GGGCUUUC G CAAAUAAC	1470	GUUUUUUG GCcgaagGCGaGuCaaGGuCu GAAAGCCC	9074
687	UUACUAGU G CCAUUUGU	1471	ACAAAUGG GCcgaagGCGaGuCaaGGuCu ACUAGUAA	9075
795	CCCUUUUAU G CCGCUGUU	1474	AACAGCGG GCcgaagGCGaGuCaaGGuCu AUAAAGGG	9076
798	UUUAUGCC G CUGUUAAC	1475	GGUAACAG GCcgaagGCGaGuCaaGGuCu GGCAUAAA	9077
911	GGCACAUU G CCACAGGA	1476	UCCUGUGG GCcgaagGCGaGuCaaGGuCu AAUGUGCC	9078
1020	UGGGGUUU G CCGCCCCU	1479	AGGGGCGG GCcgaagGCGaGuCaaGGuCu AAACCCCA	9079
1023	GGUUUGCC G CCCCUIUC	1480	GAAAGGGG GCcgaagGCGaGuCaaGGuCu GGCAAACC	9080
1034	CCUUUCAC G CAUUGUGG	1481	CCACAUUG GCcgaagGCGaGuCaaGGuCu GUGAAAGG	9081
1050	GAUAUUCU G CUUUAUUG	1482	CAUUAAG GCcgaagGCGaGuCaaGGuCu AGAAUAUC	9082
1058	GUUUAAU G CCUUUAUA	1483	UAUAAAGG GCcgaagGCGaGuCaaGGuCu AUUAAAGC	9083
1068	CUUUAUUAU G CAUGCAUA	1484	UAUGCAUG GCcgaagGCGaGuCaaGGuCu AUUAUAAAG	9084
1072	AUAUGCAU G CAUACAAG	1485	CUUGUAUG GCcgaagGCGaGuCaaGGuCu AUGCAUAU	9085
1103	ACUUUCUC G CCAACUUA	1486	UAAGUUGG GCcgaagGCGaGuCaaGGuCu GAGAAAGU	9086
1155	ACCCCGUU G CUCGGCAA	1488	UUGCCGAG GCcgaagGCGaGuCaaGGuCu AACGGGUU	9087
1177	UGGUCUAU G CCAAGUGU	1489	ACACUUGG GCcgaagGCGaGuCaaGGuCu AUAGACCA	9088
1188	AAGUGUUU G CUGACGCA	1490	UGCGUCAG GCcgaagGCGaGuCaaGGuCu AACACUUU	9089
1194	UUGCUGAC G CAACCCCC	1492	GGGGGUUG GCcgaagGCGaGuCaaGGuCu GUCAGCAA	9090
1234	CCAUCAGC G CAUGCGUG	1493	CACGCAUG GCcgaagGCGaGuCaaGGuCu GCUGAUGG	9091
1238	CAGCGCAU G CGUGGAAC	1494	GUUCCAGG GCcgaagGCGaGuCaaGGuCu AUGCGCUG	9092
1262	UCUCCUCU G CCGAUCCA	1495	UGGAUCGG GCcgaagGCGaGuCaaGGuCu AGAGGAGA	9093
1275	UCCAUAAC G CGGAACUC	1497	GAGUUCGG GCcgaagGCGaGuCaaGGuCu GGUAUGGA	9094
1290	UCCUAGCC G CUUGUUUU	1498	AAAACAAG GCcgaagGCGaGuCaaGGuCu GGCUAAGGA	9095
1299	CUUGUUUU G CUCGCAGC	1499	GCUGCGAG GCcgaagGCGaGuCaaGGuCu AAAACAAG	9096
1303	UUUUGCUC G CAGCAGGU	1500	ACCUGCUG GCcgaagGCGaGuCaaGGuCu GAGCAAAA	9097
1349	UCUGUCGU G CUCUCCCG	1502	CGGGAGAG GCcgaagGCGaGuCaaGGuCu ACGACAGA	9098
1357	GCUCUCCC G CAAAUUAU	1503	UAUAUUUG GCcgaagGCGaGuCaaGGuCu GGGAGAGC	9099
1382	CCAUGGCU G CUAGGCUG	1504	CAGCCUAG GCcgaagGCGaGuCaaGGuCu AGCCAUGG	9100
1392	UAGGCUGU G CUGCCAAC	1505	GUUGGCAG GCcgaagGCGaGuCaaGGuCu ACAGCCUA	9101
1395	GCUGUGCU G CCAACUGG	1506	CCAGUUGG GCcgaagGCGaGuCaaGGuCu AGCACAGC	9102

1411	GAUCCUAC G CGGGACGU	1507	ACGUCCCC G CcgaagGCGaGuCaaGGuCu	GUAGGAUC	9103
1442	CCGUCCGGC G CUGAAUCC	1508	GGAUUCAG G CcgaagGCGaGuCaaGGuCu	GCCGACGG	9104
1452	UGAAUCCC G CGGACGAC	1510	GUCGUCCG G CcgaagGCGaGuCaaGGuCu	GGGAUUCA	9105
1474	CCGGGGGCC G CUUGGGGC	1512	GCCCCAAG G CcgaagGCGaGuCaaGGuCu	GGCCCCGG	9106
1489	GCUCUACC G CCCGCUUC	1513	GAAGCGGG G CcgaagGCGaGuCaaGGuCu	GGUAGAGC	9107
1493	UACCGCCC G CUUCUCCG	1514	CGGAGAAG G CcgaagGCGaGuCaaGGuCu	GGGCGGUA	9108
1501	GCUCUCC G CCUAUUGU	1515	ACAAUAGG G CcgaagGCGaGuCaaGGuCu	GGAGAAGC	9109
1528	CACGGGGC G CACCUCUC	1517	GAGAGGUG G CcgaagGCGaGuCaaGGuCu	GCCCCGUG	9110
1542	CUCUUUAC G CGGACUCC	1518	GGAGUCCG G CcgaagGCGaGuCaaGGuCu	GUAAAGAG	9111
1559	CCGUCUGU G CCUUCUCA	1519	UGAGAAGG G CcgaagGCGaGuCaaGGuCu	ACAGACGG	9112
1571	UCUCAUCU G CCGGACCG	1520	CGGUCCGG G CcgaagGCGaGuCaaGGuCu	AGAUGAGA	9113
1583	GACCGUGU G CACUUCGC	1521	GCGAAGUG G CcgaagGCGaGuCaaGGuCu	ACACGGUC	9114
1590	UGCACUUC G CUUCACCU	1522	AGGUGAAG G CcgaagGCGaGuCaaGGuCu	GAAGUGCA	9115
1601	UCACCUCU G CACGUCGC	1523	GCGACGUG G CcgaagGCGaGuCaaGGuCu	AGAGGUGA	9116
1608	UGCACGUC G CAUGGAGA	1524	UCUCCAUG G CcgaagGCGaGuCaaGGuCu	GACGUGCA	9117
1628	CCGUGAAC G CCCACAGG	1526	CCUGUGGG G CcgaagGCGaGuCaaGGuCu	GUUACCGG	9118
1642	AGGAACCU G CCCAAGGU	1527	ACCUUGGG G CcgaagGCGaGuCaaGGuCu	AGGUUCCU	9119
1654	AAGGUCUU G CAUAAGAG	1528	CUCUUAUG G CcgaagGCGaGuCaaGGuCu	AAGACCUU	9120
1818	AGCACCAU G CAACUUUU	1533	AAAAGUUG G CcgaagGCGaGuCaaGGuCu	AUGGUGCU	9121
1835	UCACCUCU G CCUAAUCA	1534	UGAUUAGG G CcgaagGCGaGuCaaGGuCu	AGAGGUGA	9122
1883	CAAGCUGU G CCUUGGGU	1535	ACCCAAGG G CcgaagGCGaGuCaaGGuCu	ACAGCUUG	9123
1959	UCUUUUUU G CCUUCUGA	1537	UCAGAAGG G CcgaagGCGaGuCaaGGuCu	AAAAAGA	9124
2002	UCGACACC G CCUCUGCU	1541	AGCAGAGG G CcgaagGCGaGuCaaGGuCu	GGUGUCGA	9125
2008	CCGCCUCU G CUCUGUAU	1542	AUACAGAG G CcgaagGCGaGuCaaGGuCu	AGAGGCGG	9126
2282	GUGGAUUC G CACUCCUC	1548	GAGGAGUG G CcgaagGCGaGuCaaGGuCu	GAUCCAC	9127
2293	CUCCUCCU G CAUAUAGA	1549	UCUAUAUG G CcgaagGCGaGuCaaGGuCu	AGGAGGAG	9128
2311	CACCAAAU G CCCUAUC	1550	GAUAGGGG G CcgaagGCGaGuCaaGGuCu	AUUUGGUG	9129
2388	ACUCCUC G CCUCGCAG	1552	CUGCGAGG G CcgaagGCGaGuCaaGGuCu	GAGGGAGU	9130
2393	CUCGCCUC G CAGACGAA	1553	UUCGUCUG G CcgaagGCGaGuCaaGGuCu	GAGGCGAG	9131
2412	UCUCAAUC G CCGCGUCG	1555	CGACGCGG G CcgaagGCGaGuCaaGGuCu	GAUUGAGA	9132
2415	CAAUCGCC G CGUCGCAG	1556	CUGCGACG G CcgaagGCGaGuCaaGGuCu	GGCGAUUG	9133
2420	GCCGCGUC G CAGAAGAU	1557	AUCUUCUG G CcgaagGCGaGuCaaGGuCu	GACGCGGC	9134
2514	GGUACCUU G CUUUAUUC	1558	GAUUAAG G CcgaagGCGaGuCaaGGuCu	AAGGUACC	9135
2560	AUUCAUUU G CAGGAGGA	1560	UCCUCCUG G CcgaagGCGaGuCaaGGuCu	AAUUGAAU	9136
2641	UUAACUUAU G CCUGCUAG	1563	CUAGCAGG G CcgaagGCGaGuCaaGGuCu	AUGAUAA	9137
2645	CUAUGCCU G CUAGGUUU	1564	AAACCUAG G CcgaagGCGaGuCaaGGuCu	AGGCAUAG	9138
2677	AAAUUUUU G CCCUAGA	1565	UCUAAGGG G CcgaagGCGaGuCaaGGuCu	AAAUUUUU	9139
2740	UUCAGAC G CGACAUUA	1566	UAAUGUCG G CcgaagGCGaGuCaaGGuCu	GUCUGGAA	9140
2804	CACGUAGC G CCUCAUUU	1568	AAAUGAGG G CcgaagGCGaGuCaaGGuCu	GCUACGUG	9141
2814	CUCAUUUU G CGGGUCAC	1569	GUGACCCG G CcgaagGCGaGuCaaGGuCu	AAAAUGAG	9142
2946	UGGACCCU G CAUUCAAA	1572	UUUGAAUG G CcgaagGCGaGuCaaGGuCu	AGGGUCCA	9143
2990	CUCAACCC G CACAAGGA	1573	UCCUUGUG G CcgaagGCGaGuCaaGGuCu	GGGUUGAG	9144
3012	GGCCGGAC G CCAACAAG	1574	CUUGUUUG G CcgaagGCGaGuCaaGGuCu	GUCCGGCC	9145
3090	GCCUCAC G CUCAGGGC	1575	GCCCUGAG G CcgaagGCGaGuCaaGGuCu	GUGAGGGC	9146
3113	ACAACUGU G CCAGCAGC	1576	GCUGCUGG G CcgaagGCGaGuCaaGGuCu	ACAGUUGU	9147
3132	CUCCUCCU G CCUCCACC	1577	GGUGGAGG G CcgaagGCGaGuCaaGGuCu	AGGAGGAG	9148
51	AGGGCCCU G UACUUUCC	1578	GGAAAGUA G CcgaagGCGaGuCaaGGuCu	AGGGCCCU	9149
106	AGAAUACU G UCUCUGCC	1579	GGCAGAGA G CcgaagGCGaGuCaaGGuCu	AGUAUUCU	9150
148	GGGACCCU G UACCGAAC	1580	GUUCGGUA G CcgaagGCGaGuCaaGGuCu	AGGGUCCC	9151
198	CUGCUCGU G UUACAGGC	1581	GCCUGUAA G CcgaagGCGaGuCaaGGuCu	ACGAGCAG	9152
219	UUUUUCUU G UUGACAAA	1582	UUUGUCAA G CcgaagGCGaGuCaaGGuCu	AAGAAAAA	9153

297	ACACCCGU G UGUCUUGG	1583	CCAAGACA GCcgaagGCGaGuCaaGGuCu	ACGGGUGU	9154
299	ACCCGUGU G UCUUGGCC	1584	GGCCAAGA GCcgaagGCGaGuCaaGGuCu	ACACGGGU	9155
347	ACCAACCU G UUGUCCUC	1585	GAGGACAA GCcgaagGCGaGuCaaGGuCu	AGGUUGGU	9156
350	AACCUGUU G UCCUCCAA	1586	UUGGAGGA GCcgaagGCGaGuCaaGGuCu	AACAGGUU	9157
362	UCCAAUUU G UCCUGGUU	1587	AACCAGGA GCcgaagGCGaGuCaaGGuCu	AAAUUGGA	9158
381	CGCUGGAU G UGUCUGCG	1588	CGCAGACA GCcgaagGCGaGuCaaGGuCu	AUCCAGCG	9159
383	CUGGAUGU G UCUUGCGC	1589	GCCGCAGA GCcgaagGCGaGuCaaGGuCu	ACAUCCAG	9160
438	AUCUUCUU G UUGGUUCU	1590	AGAACCAA GCcgaagGCGaGuCaaGGuCu	AAGAAGAU	9161
465	CAAGGUUAU G UUGCCCGU	1591	ACGGGCAA GCcgaagGCGaGuCaaGGuCu	AUACCUUG	9162
476	GCCCGUUU G UCCUCUAA	1592	UUAGAGGA GCcgaagGCGaGuCaaGGuCu	AAACGGGC	9163
555	ACCUCUAU G UUUCCUC	1593	GAGGGAAA GCcgaagGCGaGuCaaGGuCu	AUAGAGGU	9164
566	UCCCUCAU G UUGCUGUA	1594	UACAGCAA GCcgaagGCGaGuCaaGGuCu	AUGAGGGA	9165
572	AUGUUGCU G UACAAAAC	1595	GUUUUGUA GCcgaagGCGaGuCaaGGuCu	AGCAACAU	9166
602	CUGCACCU G UAUUCCCA	1596	UGGGAAUA GCcgaagGCGaGuCaaGGuCu	AGGUGCAG	9167
694	UGCCAUUU G UUCAGUGG	1597	CCACUGAA GCcgaagGCGaGuCaaGGuCu	AAAUGGCA	9168
724	CCCCCACU G UCUUGGUU	1598	AAGCCAGA GCcgaagGCGaGuCaaGGuCu	AGUGGGGG	9169
750	UGGAUGAU G UGGUUUUG	1599	CAAAACCA GCcgaagGCGaGuCaaGGuCu	AUCAUCCA	9170
771	CCAAGUCU G UACAACAU	1600	AUGUUGUA GCcgaagGCGaGuCaaGGuCu	AGACUUGG	9171
801	AUGCCGCU G UUACCAAU	1601	AUUGGUAA GCcgaagGCGaGuCaaGGuCu	AGCGGCAU	9172
818	UUUCUUUU G UCUUUGGG	1602	CCCAAAGA GCcgaagGCGaGuCaaGGuCu	AAAAGAAA	9173
888	UGGGAUUAU G UAAUUGGG	1603	CCCAAUUA GCcgaagGCGaGuCaaGGuCu	AUAUCCCA	9174
927	AACAUUAU G UACAAAAA	1604	UUUUUGUA GCcgaagGCGaGuCaaGGuCu	AAUAUGUU	9175
944	AUCAAAAU G UGUUUUAG	1605	CUAAAAA GCcgaagGCGaGuCaaGGuCu	AUUUUGAU	9176
946	CAAAAUGU G UUUUAGGA	1606	UCCUAAAA GCcgaagGCGaGuCaaGGuCu	ACAUUUUG	9177
963	AACUUCU G UAAACAGG	1607	CCUGUUUA GCcgaagGCGaGuCaaGGuCu	AGGAAGUU	9178
991	GAAAGUAU G UCAACGAA	1608	UUCGUUGA GCcgaagGCGaGuCaaGGuCu	AUACUUUC	9179
1002	AACGAAUU G UGGGUCUU	1609	AAGACCCA GCcgaagGCGaGuCaaGGuCu	AAUUCGUU	9180
1039	CACGCAAU G UGGAUAUU	1610	AAUAUCCA GCcgaagGCGaGuCaaGGuCu	AUUGCGUG	9181
1137	AACAGUAU G UGAACCUU	1611	AAGGUUCA GCcgaagGCGaGuCaaGGuCu	AUACUGUU	9182
1184	UGCCAAGU G UUUGCUGA	1612	UCAGCAAA GCcgaagGCGaGuCaaGGuCu	ACUUGGCA	9183
1251	GAACCUUU G UGUCUCCU	1613	AGGAGACA GCcgaagGCGaGuCaaGGuCu	AAAGGUUC	9184
1253	ACCUUUGU G UCUCUCU	1614	AGAGGAGA GCcgaagGCGaGuCaaGGuCu	ACAAAGGU	9185
1294	AGCCGCUU G UUUUGCUC	1615	GAGCAAAA GCcgaagGCGaGuCaaGGuCu	AAGCGGCU	9186
1344	ACAAUUCU G UCGUGCUC	1616	GAGCACGA GCcgaagGCGaGuCaaGGuCu	AGAAUUGU	9187
1390	GCUAGGCU G UGUGCCA	1617	UGGCAGCA GCcgaagGCGaGuCaaGGuCu	AGCCUAGC	9188
1425	CGUCCUUU G UUUACGUC	1618	GACGUAAA GCcgaagGCGaGuCaaGGuCu	AAAGGACG	9189
1508	CGCCUAUU G UACCGACC	1619	GGUCGGUA GCcgaagGCGaGuCaaGGuCu	AAUAGGCG	9190
1557	CCCCGUCU G UGCCUUCU	1620	AGAAGGCA GCcgaagGCGaGuCaaGGuCu	AGACGGGG	9191
1581	CGGACCGU G UGCACUUC	1621	GAAGUGCA GCcgaagGCGaGuCaaGGuCu	ACGGUCCG	9192
1684	UCAGCAAU G UCAACGAC	1622	GUCGUUGA GCcgaagGCGaGuCaaGGuCu	AUUGCUGA	9193
1719	CAAAGACU G UGUGUUUA	1623	UAAACACA GCcgaagGCGaGuCaaGGuCu	AGUCUUUG	9194
1721	AAGACUGU G UGUUUAU	1624	AUUAAAAC GCcgaagGCGaGuCaaGGuCu	ACAGUCUU	9195
1723	GACUGUGU G UUUAAUGA	1625	UCAUUAAA GCcgaagGCGaGuCaaGGuCu	ACACAGUC	9196
1772	AGGUCUUU G UACUAGGA	1626	UCCUAGUA GCcgaagGCGaGuCaaGGuCu	AAAGACCU	9197
1785	AGGAGGCU G UAGGCAUA	1627	UAUGCCUA GCcgaagGCGaGuCaaGGuCu	AGCCUCCU	9198
1801	AAAUUGGU G UGUUCACC	1628	GGUGAACA GCcgaagGCGaGuCaaGGuCu	ACCAAUUU	9199
1803	AUUGGUGU G UUCACCAG	1629	CUGGUGAA GCcgaagGCGaGuCaaGGuCu	ACACCAAU	9200
1850	CAUCUCAU G UUCAUGUC	1630	GACAUGAA GCcgaagGCGaGuCaaGGuCu	AUGAGAUG	9201
1856	AUGUUCAU G UCCUACUG	1631	CAGUAGGA GCcgaagGCGaGuCaaGGuCu	AUGAACAU	9202
1864	GUCCUACU G UUCAAGCC	1632	GGCUUGAA GCcgaagGCGaGuCaaGGuCu	AGUAGGAC	9203
1881	UCCAAGCU G UGCCUUGG	1633	CCAAGGCA GCcgaagGCGaGuCaaGGuCu	AGCUUGGA	9204

1939	GAGCUUCU G UGGAGUUA	1634	UAAUCUCA GCcgaagGCGaGuCaaGGuCu	AGAAGCUC	9205
2013	UCUGCUCU G UAUCGGGG	1635	CCCCGAUA GCcgaagGCGaGuCaaGGuCu	AGAGCAGA	9206
2045	GGAACAUU G UUCACCUC	1636	GAGGUGAA GCcgaagGCGaGuCaaGGuCu	AAUGUUC	9207
2082	GCUAUUCU G UGUUGGGG	1637	CCCCAACA GCcgaagGCGaGuCaaGGuCu	AGAAUAGC	9208
2084	UAUUCUGU G UUGGGGUG	1638	CACCCCAA GCcgaagGCGaGuCaaGGuCu	ACAGAAUA	9209
2167	UCAGCUAU G UCAACGUU	1639	AACGUUGA GCcgaagGCGaGuCaaGGuCu	AUAGCUGA	9210
2205	CAACUAUU G UGGUUA	1640	UGAAACCA GCcgaagGCGaGuCaaGGuCu	AAUAGUUG	9211
2222	CAUUUCCU G UCUUACUU	1641	AAGUAAGA GCcgaagGCGaGuCaaGGuCu	AGGAAAUG	9212
2245	GAGAAACU G UUCUUGAA	1642	UUCAGAA GCcgaagGCGaGuCaaGGuCu	AGUUUCUC	9213
2262	UAUUUGGU G UCUUUUGG	1643	CCAAAAGA GCcgaagGCGaGuCaaGGuCu	ACCAAUA	9214
2274	UUUGGAGU G UGGAUUCG	1644	CGAAUCCA GCcgaagGCGaGuCaaGGuCu	ACUCCAAA	9215
2344	AAACUACU G UUGUAGA	1645	UCUAACAA GCcgaagGCGaGuCaaGGuCu	AGUAGUUU	9216
2347	CUACUGUU G UUAGACGA	1646	UCGUUUA GCcgaagGCGaGuCaaGGuCu	AACAGUAG	9217
2450	AUCUCAAU G UUAGUAUU	1647	AAUACUAA GCcgaagGCGaGuCaaGGuCu	AUUGAGAU	9218
2573	AGGACAUU G UUGAUAGA	1648	UCUAUCAA GCcgaagGCGaGuCaaGGuCu	AAUGUCCU	9219
2583	UGAUAGAU G UAAGCAAU	1649	AUUGCUUA GCcgaagGCGaGuCaaGGuCu	AUCUAUCA	9220
2594	AGCAAUUU G UGGGGCCC	1650	GGGCCCCA GCcgaagGCGaGuCaaGGuCu	AAAUUGCU	9221
2663	AUCCCAAU G UUACUAAA	1651	UUUAGUAA GCcgaagGCGaGuCaaGGuCu	AUUGGGAU	9222
2717	CAGAGUAU G UAGUUAUU	1652	AUUAAUA GCcgaagGCGaGuCaaGGuCu	AUACUCUG	9223
2901	AUCUUUCU G UCCCCAAU	1653	AUUGGGGA GCcgaagGCGaGuCaaGGuCu	AGAAAGAU	9224
3071	GGGGGACU G UUGGGGUG	1654	CACCCCAA GCcgaagGCGaGuCaaGGuCu	AGUCCCC	9225
3111	UCACAACU G UGCCAGCA	1655	UGCUGGCA GCcgaagGCGaGuCaaGGuCu	AGUUGUGA	9226
40	AUCCCAGA G UCAGGGCC	1656	GGCCUGA GCcgaagGCGaGuCaaGGuCu	UCUGGGAU	9227
46	GAGUCAGG G CCCUGUAC	1657	GUACAGGG GCcgaagGCGaGuCaaGGuCu	CCUGACTC	9228
65	UCCUGCUG G UGGCUCCA	1658	UGGAGCCA GCcgaagGCGaGuCaaGGuCu	CAGCAGGA	9229
68	UGCUGGUG G CUCCAGUU	1659	AACUGGAG GCcgaagGCGaGuCaaGGuCu	CACCAGCA	9230
74	UGGCUCCA G UUCAGGAA	1660	UUCUGAA GCcgaagGCGaGuCaaGGuCu	UGGAGCCA	9231
85	CAGGAACA G UGAGCCCU	1661	AGGGCUCA GCcgaagGCGaGuCaaGGuCu	UGUUCUG	9232
89	AACAGUGA G CCCUGCUC	1662	GAGCAGGG GCcgaagGCGaGuCaaGGuCu	UCACUGUU	9233
120	GCCAUUUC G UCAAUCUU	1663	AAGAUUGA GCcgaagGCGaGuCaaGGuCu	GAUUAUGG	9234
196	CCCUGCUC G UGUUACAG	1664	CUGUAACA GCcgaagGCGaGuCaaGGuCu	GAGCAGGG	9235
205	UGUUACAG G CGGGUUU	1665	AAACCCCG GCcgaagGCGaGuCaaGGuCu	CUGUAACA	9236
210	CAGGCGGG G UUUUUCUU	1666	AGAAAAA GCcgaagGCGaGuCaaGGuCu	CCCGCCUG	9237
248	ACCACAGA G UCUAGACU	1667	AGUCUAGA GCcgaagGCGaGuCaaGGuCu	UCUGUGGU	9238
258	CUAGACUC G UGGUGGAC	1668	GUCCACCA GCcgaagGCGaGuCaaGGuCu	GAGUCUAG	9239
261	GACUCGUG G UGGACUUC	1669	GAAGUCCA GCcgaagGCGaGuCaaGGuCu	CACGAGUC	9240
295	GAACACCC G UGUGUCUU	1670	AAGACACA GCcgaagGCGaGuCaaGGuCu	GGGUGUUC	9241
305	GUGUCUUG G CCAAAAUU	1671	AAUUUUGG GCcgaagGCGaGuCaaGGuCu	CAAGACAC	9242
318	AAUUCGCA G UCCCAAU	1672	AUUUGGGA GCcgaagGCGaGuCaaGGuCu	UGCAGAUU	9243
332	AAUCUCCA G UCACUCAC	1673	GUGAGUGA GCcgaagGCGaGuCaaGGuCu	UGGAGAUU	9244
368	UUGUCCUG G UUAUCGCU	1674	AGCGAUAA GCcgaagGCGaGuCaaGGuCu	CAGGACAA	9245
390	UGUCUGCG G CGUUUAU	1675	AUAAAAAC GCcgaagGCGaGuCaaGGuCu	CGCAGACA	9246
392	UCUGCGGC G UUUUAUCA	1676	UGAUAAAA GCcgaagGCGaGuCaaGGuCu	GCCGCAGA	9247
442	UCUUGUUG G UUCUUCUG	1677	CAGAAGAA GCcgaagGCGaGuCaaGGuCu	CAACAAGA	9248
461	CUAUCAAG G UAUGUUGC	1678	GCAACUA GCcgaagGCGaGuCaaGGuCu	CUUGAUAG	9249
472	UGUUGCCC G UUUGUCCU	1679	AGGACAAA GCcgaagGCGaGuCaaGGuCu	GGGCAACA	9250
506	AACAACCA G CACCGGAC	1680	GUCCGGUG GCcgaagGCGaGuCaaGGuCu	UGGUUGUU	9251
625	CAUCUUGG G CUUUCGCA	1681	UGCGAAAG GCcgaagGCGaGuCaaGGuCu	CCAAGAUG	9252
648	CUAUGGGA G UGGGCCUC	1682	GAGGCCCA GCcgaagGCGaGuCaaGGuCu	UCCCAUAG	9253
652	GGGAGUGG G CCUCAGUC	1683	GACUGAGG GCcgaagGCGaGuCaaGGuCu	CCACUCCC	9254
658	GGGCCUCA G UCCGUUUC	1684	GAACGGGA GCcgaagGCGaGuCaaGGuCu	UGAGGCCC	9255



662	CUCAGUCC G UUUCUCUU	1685	AAGAGAAA GCcgaagGCGaGuCaaGGuCu	GGACUGAG	9256
672	UUCUCUUG G CUCAGUUU	1686	AAACUGAG GCcgaagGCGaGuCaaGGuCu	CAAGAGAA	9257
677	UUGGCUCA G UUUACUAG	1687	CUAGUAAA GCcgaagGCGaGuCaaGGuCu	UGAGCCAA	9258
685	GUUUACUA G UGCCAUUU	1688	AAAUUGCA GCcgaagGCGaGuCaaGGuCu	UAGUAAAC	9259
699	UUUGUUCA G UGGUUCGU	1689	ACGAACCA GCcgaagGCGaGuCaaGGuCu	UGAACAAA	9260
702	GUUCAGUG G UUCGUAGG	1690	CCUACGAA GCcgaagGCGaGuCaaGGuCu	CACUGAAC	9261
706	AGUGGUUC G UAGGGCUU	1691	AAGCCCUA GCcgaagGCGaGuCaaGGuCu	GAACCACU	9262
711	UUCGUAGG G CUUUCCCC	1692	GGGGAAAG GCcgaagGCGaGuCaaGGuCu	CCUACGAA	9263
729	ACUGUCUG G CUUUCAGU	1693	ACUGAAAG GCcgaagGCGaGuCaaGGuCu	CAGACAGU	9264
736	GGCUUUCA G UUAUAUGG	1694	CCAUUAUA GCcgaagGCGaGuCaaGGuCu	UGAAAGCC	9265
753	AUGAUGUG G UUUUGGGG	1695	CCCCAAAA GCcgaagGCGaGuCaaGGuCu	CACAUCAU	9266
762	UUUUGGGG G CCAAGUCU	1696	AGACUUGG GCcgaagGCGaGuCaaGGuCu	CCCCAAAA	9267
767	GGGGCCAA G UCUGUACA	1697	UGUACAGA GCcgaagGCGaGuCaaGGuCu	UUGGCCCC	9268
785	CAUCUUGA G UCCCUUUA	1698	UAAAGGGA GCcgaagGCGaGuCaaGGuCu	UCAAGAUG	9269
826	GUCUUUGG G UAUACAUU	1699	AAUGUAUA GCcgaagGCGaGuCaaGGuCu	CCAAAGAC	9270
898	AAUUGGGA G UUGGGGCA	1700	UGCCCCAA GCcgaagGCGaGuCaaGGuCu	UCCCCAUU	9271
904	GAGUUGGG G CACAUUGC	1701	GCAAUGUG GCcgaagGCGaGuCaaGGuCu	CCCAACUC	9272
971	GUAAACAG G CCUAUUGA	1702	UCAAUAGG GCcgaagGCGaGuCaaGGuCu	CUGUUUAC	9273
987	AUUGGAAA G UAUGUCAA	1703	UGACAUAU GCcgaagGCGaGuCaaGGuCu	UUUCCAAU	9274
1006	AAUUGUGG G UCUUUUGG	1704	CCAAAAGA GCcgaagGCGaGuCaaGGuCu	CCACAAUU	9275
1016	CUUUUGGG G UUUGCCGC	1705	GCGGCAAA GCcgaagGCGaGuCaaGGuCu	CCCCAAAG	9276
1080	GCAUACAA G CAAAACAG	1706	CUGUUUUG GCcgaagGCGaGuCaaGGuCu	UUGUAUGC	9277
1089	CAAAACAG G CUUUUACU	1707	AGUAAAAG GCcgaagGCGaGuCaaGGuCu	CUGUUUUG	9278
1116	CUUACAA G CCUUUCUA	1708	UAGAAAGG GCcgaagGCGaGuCaaGGuCu	CUUGUAAG	9279
1126	CUUUCUAA G UAAACAGU	1709	ACUGUUUA GCcgaagGCGaGuCaaGGuCu	UUAGAAAG	9280
1133	AGUAAACA G UAUGUGAA	1710	UUCACAUU GCcgaagGCGaGuCaaGGuCu	UGUUUACU	9281
1152	UUUACCCC G UUGCUCGG	1711	CCGAGCAA GCcgaagGCGaGuCaaGGuCu	GGGGUAAA	9282
1160	GUUGCUCG G CAACGGCC	1712	GGCCGUUG GCcgaagGCGaGuCaaGGuCu	CGAGCAAC	9283
1166	CGGCAACG G CCUGGUCU	1713	AGACCAGG GCcgaagGCGaGuCaaGGuCu	CGUUGCCG	9284
1171	ACGGCCUG G UCUAUGCC	1714	GGCAUAGA GCcgaagGCGaGuCaaGGuCu	CAGGCCGU	9285
1182	UAUGCCAA G UGUUUGCU	1715	AGCAAACA GCcgaagGCGaGuCaaGGuCu	UUGGCAUA	9286
1207	CCCCACUG G UUGGGGCU	1716	AGCCCCAA GCcgaagGCGaGuCaaGGuCu	CAGUGGGG	9287
1213	UGGUUGGG G CUUGGCCA	1717	UGGCCAAG GCcgaagGCGaGuCaaGGuCu	CCCAACCA	9288
1218	GGGGCUUG G CCAUAGGC	1718	GCCUAUGG GCcgaagGCGaGuCaaGGuCu	CAAGCCCC	9289
1225	GGCCAUG G CCAUCAGC	1719	GCUGAUGG GCcgaagGCGaGuCaaGGuCu	CUAUGGCC	9290
1232	GGCCAUGA G CGCAUGCG	1720	CGCAUGCG GCcgaagGCGaGuCaaGGuCu	UGAUGGCC	9291
1240	GCGAUGC G UGGAACCU	1721	AGGUUCCA GCcgaagGCGaGuCaaGGuCu	GCAUGCGC	9292
1287	AACUCCUA G CCGCUUGU	1722	ACAAGCGG GCcgaagGCGaGuCaaGGuCu	UAGGAGUU	9293
1306	UGCUCGCA G CAGGUCUG	1723	CAGACCUG GCcgaagGCGaGuCaaGGuCu	UGCGAGCA	9294
1310	CGCAGCAG G UCUGGGGC	1724	GCCCCAGA GCcgaagGCGaGuCaaGGuCu	CUGCUGCG	9295
1317	GGUCUGGG G CAAAACUC	1725	GAGUUUUG GCcgaagGCGaGuCaaGGuCu	CCCAGACC	9296
1347	AUUCUGUC G UGCUCUCC	1726	GGAGAGCA GCcgaagGCGaGuCaaGGuCu	GACAGAAU	9297
1379	UUUCCAUG G CUGCUAGG	1727	CCUAGCAG GCcgaagGCGaGuCaaGGuCu	CAUGGAAA	9298
1387	GCUGCUAG G CUGUGCUG	1728	CAGCACAG GCcgaagGCGaGuCaaGGuCu	CUAGCAGC	9299
1418	CGCGGGAC G UCCUUUGU	1729	ACAAAGGA GCcgaagGCGaGuCaaGGuCu	GUCCCGCG	9300
1431	UUGUUUAC G UCCCUGCG	1730	CGACGGGA GCcgaagGCGaGuCaaGGuCu	GUAAACAA	9301
1436	UACGUCCC G UCGGCGCU	1731	AGCGCCGA GCcgaagGCGaGuCaaGGuCu	GGACGUUA	9302
1440	UCCCUGCG G CGCUGAAU	1732	AUUCAGCG GCcgaagGCGaGuCaaGGuCu	CGACGGGA	9303
1471	CUCCCGGG G CCGCUUGG	1733	CCAAGCGG GCcgaagGCGaGuCaaGGuCu	CCCGGGAG	9304
1481	CGCUUGGG G CUCUACCG	1734	CGGUAGAG GCcgaagGCGaGuCaaGGuCu	CCCAAGCG	9305
1517	UACCGACC G UCCACGGG	1735	CCCGUGGA GCcgaagGCGaGuCaaGGuCu	GGUCGGUA	9306

1526	UCCACGGG G CGCACCUC	1736	GAGGUGCG GCcgaagGCGaGuCaaGGuCu	CCCUGGA	9307
1553	GACUCCCC G UCUGUGCC	1737	GGCACAGA GCcgaagGCGaGuCaaGGuCu	GGGAGUC	9308
1579	GCCGGACC G UGUGCACU	1738	AGUGCACA GCcgaagGCGaGuCaaGGuCu	GGUCCGGC	9309
1605	CUCUGCAC G UCGCAUGG	1739	CCAUGCGA GCcgaagGCGaGuCaaGGuCu	GUGCAGAG	9310
1622	AGACCACC G UGAACGCC	1740	GGCGUUCA GCcgaagGCGaGuCaaGGuCu	GGUGGUCU	9311
1649	UGCCCAAG G UCUUGCAU	1741	AUGCAAGA GCcgaagGCGaGuCaaGGuCu	CUUGGGCA	9312
1679	GACUUUCA G CAUUGUCA	1742	UGACAUUG GCcgaagGCGaGuCaaGGuCu	UGAAAGUC	9313
1703	ACCUUGAG G CAUACUUC	1743	GAAGUAUG GCcgaagGCGaGuCaaGGuCu	CUCAAGGU	9314
1732	UUUAAUGA G UGGGAGGA	1744	UCCUCCCA GCcgaagGCGaGuCaaGGuCu	UCAUUAAA	9315
1741	UGGGAGGA G UUGGGGGA	1745	UCCCCCAA GCcgaagGCGaGuCaaGGuCu	UCCUCCCA	9316
1754	GGGAGGAG G UUAGGUUA	1746	UAACCUAA GCcgaagGCGaGuCaaGGuCu	CUCCUCCC	9317
1759	GAGGUUAG G UUAAGGU	1747	ACCUUUAA GCcgaagGCGaGuCaaGGuCu	CUAACCUC	9318
1766	GGUAAAAG G UCUUGUA	1748	UACAAAGA GCcgaagGCGaGuCaaGGuCu	CUUUAACC	9319
1782	ACUAGGAG G CUGUAGGC	1749	GCCUACAG GCcgaagGCGaGuCaaGGuCu	CUCCUAGU	9320
1789	GGCUGUAG G CAUAAAUU	1750	AAUUUAUG GCcgaagGCGaGuCaaGGuCu	CUACAGCC	9321
1799	AUAAAUUG G UGUGUUA	1751	UGAACACA GCcgaagGCGaGuCaaGGuCu	CAAUUUUAU	9322
1811	GUUCACCA G CACCAUGC	1752	GCAUGGUG GCcgaagGCGaGuCaaGGuCu	UGGUGAAC	9323
1870	CUGUUCAA G CCUCCAAG	1753	CUUGGAGG GCcgaagGCGaGuCaaGGuCu	UGGAACAG	9324
1878	GCCUCCAA G CUGUGCCU	1754	AGGCACAG GCcgaagGCGaGuCaaGGuCu	UUGGAGGC	9325
1890	UGCCUUGG G UGGCUUUG	1755	CAAAGCCA GCcgaagGCGaGuCaaGGuCu	CCAAGGCA	9326
1893	CUUGGGUG G CUUUGGGG	1756	CCCCAAAG GCcgaagGCGaGuCaaGGuCu	CACCCAAG	9327
1901	GCUUUGGG G CAUGGACA	1757	UGUCCAUG GCcgaagGCGaGuCaaGGuCu	CCCAAAGC	9328
1917	AUUGACCC G UAUAAGA	1758	UCUUUAUA GCcgaagGCGaGuCaaGGuCu	GGGUCAAU	9329
1933	AAUUUGGA G CUUCUGUG	1759	CACAGAAG GCcgaagGCGaGuCaaGGuCu	UCCAAAUU	9330
1944	UCUGUGGA G UUACUCUC	1760	GAGAGUAA GCcgaagGCGaGuCaaGGuCu	UCCACAGA	9331
2023	AUCGGGGG G CCUAGAG	1761	CUCUAAGG GCcgaagGCGaGuCaaGGuCu	CCCCCGAU	9332
2031	GCCUUGA G UCUCGGGA	1762	UCCGGAGA GCcgaagGCGaGuCaaGGuCu	UCUAAGGC	9333
2062	ACCAUACG G CACUCAGG	1763	CCUGAGUG GCcgaagGCGaGuCaaGGuCu	CGUAUGGU	9334
2070	GCACUCAG G CAAGCUAU	1764	AUAGCUUG GCcgaagGCGaGuCaaGGuCu	CUGAGUGC	9335
2074	UCAGGCAA G CUAUUCUG	1765	CAGAAUAG GCcgaagGCGaGuCaaGGuCu	UUGCCUGA	9336
2090	GUGUUGGG G UGAGUGA	1766	UCAACUCA GCcgaagGCGaGuCaaGGuCu	CCCAACAC	9337
2094	UGGGUGA G UUGAUGAA	1767	UUCAUCA GCcgaagGCGaGuCaaGGuCu	UCACCCCA	9338
2107	UGAAUCUA G CCACCUGG	1768	CCAGGUGG GCcgaagGCGaGuCaaGGuCu	UAGAUAUA	9339
2116	CCACCUGG G UGGGAAGU	1769	ACUCCCCA GCcgaagGCGaGuCaaGGuCu	CCAGGUGG	9340
2123	GGUGGGAA G UAAUUGG	1770	CCAAAUUA GCcgaagGCGaGuCaaGGuCu	UUCCACC	9341
2140	AAGAUCCA G CAUCCAGG	1771	CCUGGAUG GCcgaagGCGaGuCaaGGuCu	UGGAUCUU	9342
2155	GGGAUUA G UAGUCAGC	1772	GCUGACUA GCcgaagGCGaGuCaaGGuCu	UAAUCCCC	9343
2158	AAUUAUA G UCAGCUAU	1773	AUAGCUGA GCcgaagGCGaGuCaaGGuCu	UACUAAUU	9344
2162	AGUAGUCA G CUAUGUCA	1774	UGACAUAG GCcgaagGCGaGuCaaGGuCu	UGACUACU	9345
2173	AUGUCAAC G UUAUAUUG	1775	CAUAUUA GCcgaagGCGaGuCaaGGuCu	GUUGACAU	9346
2183	UAAUAUGG G CCUAAAAA	1776	UUUUUAGG GCcgaagGCGaGuCaaGGuCu	CCAUUAUA	9347
2208	CUAUUGUG G UUUCACAU	1777	AUGUGAAA GCcgaagGCGaGuCaaGGuCu	CACAAUAG	9348
2235	ACUUUUGG G CGAGAAAC	1778	GUUUCUG GCcgaagGCGaGuCaaGGuCu	CCAAAAGU	9349
2260	AAUAUUG G UGUUUUU	1779	AAAAGACA GCcgaagGCGaGuCaaGGuCu	CAAAUAUU	9350
2272	CUUUUGGA G UGUGGAUU	1780	AAUCCACA GCcgaagGCGaGuCaaGGuCu	UCCAAAAG	9351
2360	ACGAAGAG G CAGGUCCC	1781	GGGACCUG GCcgaagGCGaGuCaaGGuCu	CUCUUCGU	9352
2364	AGAGGAG G UCCCCUAG	1782	CUAGGGGA GCcgaagGCGaGuCaaGGuCu	CUGCCUCU	9353
2403	AGACGAAG G UCUCAAUC	1783	GAUUGAGA GCcgaagGCGaGuCaaGGuCu	CUUCGUCU	9354
2417	AUCGCCGC G UCGCAGAA	1784	UUCUGCGA GCcgaagGCGaGuCaaGGuCu	GCGGCGAU	9355
2454	CAAUUUUA G UAUUCCUU	1785	AAGGAAUA GCcgaagGCGaGuCaaGGuCu	UAACAUUG	9356
2474	CACUAAG G UGGGAAAC	1786	GUUCCCCA GCcgaagGCGaGuCaaGGuCu	CUUAUGUG	9357

2491	UUUACGGG G CUUUAUUC	1787	GAAUAAAG GCcgaagGCGaGuCaaGGuCu	CCCUGAAA	9358
2507	CUUCUACG G UACCUUGC	1788	GCAAGGUA GCcgaagGCGaGuCaaGGuCu	CGUAGAAG	9359
2530	CCUAAAUG G CAAACUCC	1789	GGAGUUUG GCcgaagGCGaGuCaaGGuCu	CAUUUAGG	9360
2587	AGAUGUAA G CAUUUUGU	1790	ACAAAUUG GCcgaagGCGaGuCaaGGuCu	UUACAUCU	9361
2599	UUUGUGGG G CCCCUUAC	1791	GUAAGGGG GCcgaagGCGaGuCaaGGuCu	CCCACAAA	9362
2609	CCCUUACA G UAAUUGAA	1792	UUCAUUUA GCcgaagGCGaGuCaaGGuCu	UGUAAGGG	9363
2650	CCUGCUAG G UUUUAUCC	1793	GGAUAAAA GCcgaagGCGaGuCaaGGuCu	CUAGCAGG	9364
2701	AUCAAAAC G UAUUAUCC	1794	GGAUAAUA GCcgaagGCGaGuCaaGGuCu	GGUUUGAU	9365
2713	UAUCCAGA G UAUGUAGU	1795	ACUACAUA GCcgaagGCGaGuCaaGGuCu	UCUGGAUA	9366
2720	AGUAUGUA G UUAUAUUA	1796	AUGAUUUA GCcgaagGCGaGuCaaGGuCu	UACAUACU	9367
2768	UUUGGAAG G CGGGGAUC	1797	GAUCCCCG GCcgaagGCGaGuCaaGGuCu	CUUCCAAA	9368
2791	AAAAGAGA G UCCACACG	1798	CGUGUGGA GCcgaagGCGaGuCaaGGuCu	UCUCUUUU	9369
2799	GUCCACAC G UAGCGCCU	1799	AGGCGCUA GCcgaagGCGaGuCaaGGuCu	GUGUGGAC	9370
2802	CACACGUA G CGCCUCAU	1800	AUGAGGCG GCcgaagGCGaGuCaaGGuCu	UACGUGUG	9371
2818	UUUUGCGG G UCACCAUA	1801	UAUGGUGA GCcgaagGCGaGuCaaGGuCu	CCGCAAAA	9372
2848	GAUCUACA G CAUGGGAG	1802	CUCCCAUG GCcgaagGCGaGuCaaGGuCu	UGUAGAUC	9373
2857	CAUGGGAG G UUGGUCUU	1803	AAGACCAA GCcgaagGCGaGuCaaGGuCu	CUCCCAUG	9374
2861	GGAGGUUG G UCUUCCAA	1804	UUGGAAGA GCcgaagGCGaGuCaaGGuCu	CAACUCC	9375
2881	UCGAAAAG G CAUGGGGA	1805	UCCCCAUG GCcgaagGCGaGuCaaGGuCu	CUUUUCGA	9376
2936	GAUCAUCA G UUGGACCC	1806	GGGUCCAA GCcgaagGCGaGuCaaGGuCu	UGAUGAUC	9377
2955	CAUUCAAA G CCAACUCA	1807	UGAGUUGG GCcgaagGCGaGuCaaGGuCu	UUUGAAUG	9378
2964	CCAACUCA G UAAAUCCA	1808	UGGAUUUA GCcgaagGCGaGuCaaGGuCu	UGAGUUGG	9379
3005	GACAACUG G CCGGACGC	1809	GCGUCCGG GCcgaagGCGaGuCaaGGuCu	CAGUUGUC	9380
3021	CCAACAAG G UGGGAGUG	1810	CACUCCCA GCcgaagGCGaGuCaaGGuCu	CUUGUUGG	9381
3027	AGGUGGGA G UGGGAGCA	1811	UGCUCCCA GCcgaagGCGaGuCaaGGuCu	UCCCACCU	9382
3033	GAGUGGGA G CAUUCGGG	1812	CCCGAAUG GCcgaagGCGaGuCaaGGuCu	UCCACUC	9383
3041	GCAUUCGG G CCAGGGUU	1813	AACCCUGG GCcgaagGCGaGuCaaGGuCu	CCGAAUGC	9384
3047	GGGCCAGG G UUCACCCC	1814	GGGUGGAA GCcgaagGCGaGuCaaGGuCu	CCUGGCCC	9385
3077	CUGUUGGG G UGGAGCCC	1815	GGGCUCCA GCcgaagGCGaGuCaaGGuCu	CCCAACAG	9386
3082	GGGUGGGA G CCCUCACG	1816	CGUGAGGG GCcgaagGCGaGuCaaGGuCu	UCCACCCC	9387
3097	CGCUCAGG G CCUACUCA	1817	UGAGUAGG GCcgaagGCGaGuCaaGGuCu	CCUGAGCG	9388
3117	CUGUGCCA G CAGCUCCU	1818	AGGAGCUG GCcgaagGCGaGuCaaGGuCu	UGGCACAG	9389
3120	UGCCAGCA G CUCCUCCU	1819	AGGAGGAG GCcgaagGCGaGuCaaGGuCu	UGCUGGCA	9390
3146	ACCAAUCG G CAGUCAGG	1820	CCUGACUG GCcgaagGCGaGuCaaGGuCu	CGAUUGGU	9391
3149	AAUCGGCA G UCAGGAAG	1821	CUUCCUGA GCcgaagGCGaGuCaaGGuCu	UGCCGAUU	9392
3158	UCAGGAAG G CAGCCUAC	1822	GUAGGCVG GCcgaagGCGaGuCaaGGuCu	CUUCCUGA	9393
3161	GGAAGGCA G CCUACUCC	1823	GGAGUAGG GCcgaagGCGaGuCaaGGuCu	UGCCUUCC	9394
3204	AUCCUCAG G CCAUGCAG	1824	CUGCAUGG GCcgaagGCGaGuCaaGGuCu	CUGAGGAU	9395

Input Sequence = AF100308. Cut Site = YG/M or UG/U.

Stem Length = 8 . Core Sequence = GCcgaagGCGaGuCaaGGuCu

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

TABLE IX: HUMAN HBV DNAZYME AND SUBSTRATE SEQUENCE

Pos	Substrate	Seq ID	DNAzyme	Seq ID
508	CAACCAGC A CCGGACCA	833	TGGTCCGG GGCTAGCTACAACGA GCTGGTTG	9396
1632	GAACGCC A CAGGAACC	1096	GGTTCCTG GGCTAGCTACAACGA GGGCGTTC	9397
2992	CAACCCGC A CAAGGACA	1376	TGTCCTTG GGCTAGCTACAACGA GCGGGTTG	9398
61	ACUUUCCU G CUGUGGC	1448	GCCACCAG GGCTAGCTACAACGA AGGAAAGT	9399
94	UGAGCCCU G CUCAGAAU	1450	ATTCTGAG GGCTAGCTACAACGA AGGGCTCA	9400
112	CUGUCUCU G CCAUAUCG	1451	CGATATGG GGCTAGCTACAACGA AGAGACAG	9401
169	AGAACAUC G CAUCAGGA	1454	TCCTGATG GGCTAGCTACAACGA GATGTTCT	9402
192	GGACCCCU G CUCGUGUU	1455	AACACGAG GGCTAGCTACAACGA AGGGGTCC	9403
315	CAAAAUUC G CAGUCCCA	1457	TGGGACTG GGCTAGCTACAACGA GAATTTTG	9404
374	UGGUUAUC G CUGGAUGU	1458	ACATCCAG GGCTAGCTACAACGA GATAACCA	9405
387	AUGUGUCU G CGGCGUUU	1459	AAACGCCG GGCTAGCTACAACGA AGACACAT	9406
410	CUUCCUCU G CAUCCUGC	1460	GCAGGATG GGCTAGCTACAACGA AGAGGAAG	9407
417	UGCAUCCU G CUGCUAUG	1461	CATAGCAG GGCTAGCTACAACGA AGGATGCA	9408
420	AUCCUGCU G CUAUGCCU	1462	AGGCATAG GGCTAGCTACAACGA AGCAGGAT	9409
425	GCUGCUAU G CCUCAUCU	1463	AGATGAGG GGCTAGCTACAACGA ATAGCAGC	9410
468	GGUAUGUU G CCCGUUUG	1464	CAAACGGG GGCTAGCTACAACGA AACATACC	9411
518	CGGACCAU G CAAAACCU	1465	AGGTTTGT GGCTAGCTACAACGA ATGGTCCG	9412
527	CAAAACCU G CACAACUC	1466	GAGTTGTG GGCTAGCTACAACGA AGGTTTGT	9413
538	CAACUCCU G CUCAAGGA	1467	TCCTTGAG GGCTAGCTACAACGA AGGAGTTG	9414
569	CUCAUGUU G CUGUACAA	1468	TTGTACAG GGCTAGCTACAACGA AACATGAG	9415
596	CGGAAACU G CACCUGUA	1469	TACAGGTG GGCTAGCTACAACGA AGTTTCCG	9416
631	GGCUUUC G CAAAUAAC	1470	GTATTTTG GGCTAGCTACAACGA GAAAGCCC	9417
687	UUACUAGU G CCAUUUGU	1471	ACAAATGG GGCTAGCTACAACGA ACTAGTAA	9418
795	CCCUUUAU G CCGCUGUU	1474	AACAGCGG GGCTAGCTACAACGA ATAAAGGG	9419
798	UUUAUGCC G CUGUUACC	1475	GGTAACAG GGCTAGCTACAACGA GGCATAAA	9420
911	GGCACAUC G CCACAGGA	1476	TCCTGTGG GGCTAGCTACAACGA AATGTGCC	9421
1020	UGGGGUUU G CCGCCCUU	1479	AGGGGCGG GGCTAGCTACAACGA AAACCCCA	9422
1023	GGUUUGCC G CCCCUUUC	1480	GAAAGGGG GGCTAGCTACAACGA GGCAAAAC	9423
1034	CCUUUCAC G CAAUGUGG	1481	CCACATTG GGCTAGCTACAACGA GTGAAAGG	9424
1050	GAUAUUCU G CUUUAUUG	1482	CATTAAAG GGCTAGCTACAACGA AGAATATC	9425
1058	GCUUUAAU G CCUUUAUA	1483	TATAAAGG GGCTAGCTACAACGA ATTAAAGC	9426
1068	CUUUAUAU G CAUGCAUA	1484	TATGCATG GGCTAGCTACAACGA ATATAAAG	9427
1072	AUAUGCAU G CAUACAAG	1485	CTTGATG GGCTAGCTACAACGA ATGCATAT	9428
1103	ACUUUCUC G CCAACUUA	1486	TAAGTTGG GGCTAGCTACAACGA GAGAAAGT	9429
1155	ACCCCGUU G CUCGGCAA	1488	TTGCCGAG GGCTAGCTACAACGA AACGGGGT	9430
1177	UGGUCUAU G CCAAGUGU	1489	ACACTTGG GGCTAGCTACAACGA ATAGACCA	9431
1188	AAGUGUUU G CUGACGCA	1490	TGCGTCAG GGCTAGCTACAACGA AAACACTT	9432
1194	UUGCUGAC G CAACCCCC	1492	GGGGGTTG GGCTAGCTACAACGA GTCAGCAA	9433
1234	CCAUCAGC G CAUGCGUG	1493	CACGCATG GGCTAGCTACAACGA GCTGATGG	9434
1238	CAGCGCAU G CGUGGAAC	1494	GTTCCACG GGCTAGCTACAACGA ATGCGCTG	9435
1262	UCUCCUCU G CCGAUCCA	1495	TGGATCGG GGCTAGCTACAACGA AGAGGAGA	9436
1275	UCCAUACC G CGGAACUC	1497	GAGTTCCG GGCTAGCTACAACGA GGTATGGA	9437
1290	UCCUAGCC G CUUGUUUU	1498	AAAACAAG GGCTAGCTACAACGA GGCTAGGA	9438
1299	CUUGUUUU G CUCGCAGC	1499	GCTGCGAG GGCTAGCTACAACGA AAAACAAG	9439
1303	UUUUGCUC G CAGCAGGU	1500	ACCTGCTG GGCTAGCTACAACGA GAGCAAAA	9440
1349	UCUGUCGU G CUCUCCCG	1502	CGGGAGAG GGCTAGCTACAACGA ACGACAGA	9441
1357	GCUCUCCC G CAAUAUAU	1503	TATATTTG GGCTAGCTACAACGA GGGAGAGC	9442

1382	CCAUGGCU G CUAGGCUG	1504	CAGCCTAG GGCTAGCTACAACGA AGCCATGG	9443
1392	UAGGCUGU G CUGCCAAC	1505	GTTGGCAG GGCTAGCTACAACGA ACAGCCTA	9444
1395	GCUGUGCU G CCAACUGG	1506	CCAGTTGG GGCTAGCTACAACGA AGCACAGC	9445
1411	GAUCCUAC G CGGGACGU	1507	ACGTCCCG GGCTAGCTACAACGA GTAGGATC	9446
1442	CCGUCGGC G CUGAAUCC	1508	GGATTGAG GGCTAGCTACAACGA GCCGACGG	9447
1452	UGAAUCCC G CGGACGAC	1510	GTCGTCCG GGCTAGCTACAACGA GGGATTCA	9448
1474	CCGGGGCC G CUUGGGGC	1512	GCCCCAAG GGCTAGCTACAACGA GGCCCCGG	9449
1489	GCUCUACC G CCCGUUC	1513	GAAGCGGG GGCTAGCTACAACGA GGTAGAGC	9450
1493	UACCGCCC G CUUCUCCG	1514	CGGAGAAG GGCTAGCTACAACGA GGGCGGTA	9451
1501	GCUUCUCC G CCUAUUGU	1515	ACAATAGG GGCTAGCTACAACGA GGAGAAGC	9452
1528	CACGGGGC G CACCUCUC	1517	GAGAGGTG GGCTAGCTACAACGA GCCCCGTG	9453
1542	CUCUUUAC G CGGACUCC	1518	GGAGTCCG GGCTAGCTACAACGA GTAAAGAG	9454
1559	CCGUCUGU G CCUUCUCA	1519	TGAGAAGG GGCTAGCTACAACGA ACAGACGG	9455
1571	UCUCAUCU G CCGGACCG	1520	CGGTCCCG GGCTAGCTACAACGA AGATGAGA	9456
1583	GACCGUGU G CACUUCGC	1521	GCGAAGTG GGCTAGCTACAACGA ACACGGTC	9457
1590	UGCACUUC G CUUCACCU	1522	AGGTGAAG GGCTAGCTACAACGA GAAGTGCA	9458
1601	UCACCUCU G CACGUCGC	1523	GCGACGTG GGCTAGCTACAACGA AGAGGTGA	9459
1608	UGCACGUC G CAUGGAGA	1524	TCTCCATG GGCTAGCTACAACGA GACGTGCA	9460
1628	CCGUGAAC G CCCACAGG	1526	CCTGTGGG GGCTAGCTACAACGA GTTCACGG	9461
1642	AGGAACCU G CCCAAGGU	1527	ACCTTGGG GGCTAGCTACAACGA AGGTTCTT	9462
1654	AAGGUCUU G CAUAAGAG	1528	CTCTTATG GGCTAGCTACAACGA AAGACCTT	9463
1818	AGCACCAU G CAACUUUU	1533	AAAAGTTG GGCTAGCTACAACGA ATGGTGCT	9464
1835	UCACCUCU G CCUAAUCA	1534	TGATTAGG GGCTAGCTACAACGA AGAGGTGA	9465
1883	CAAGCUGU G CCUUGGGU	1535	ACCCAAGG GGCTAGCTACAACGA ACAGCTTG	9466
1959	UCUUUUUU G CCUUCUGA	1537	TCAGAAGG GGCTAGCTACAACGA AAAAAAGA	9467
2002	UCGACACC G CCUCUGCU	1541	AGCAGAGG GGCTAGCTACAACGA GGTGTCGA	9468
2008	CCGCCUCU G CUCUGUAU	1542	ATACAGAG GGCTAGCTACAACGA AGAGGCGG	9469
2282	GUGGAUUC G CACUCCUC	1548	GAGGAGTG GGCTAGCTACAACGA GAATCCAC	9470
2293	CUCCUCCU G CAUAUAGA	1549	TCTATATG GGCTAGCTACAACGA AGGAGGAG	9471
2311	CACCAAU G CCCCUAUC	1550	GATAGGGG GGCTAGCTACAACGA ATTTGGTG	9472
2388	ACUCCUC G CCUCGCAG	1552	CTGCGAGG GGCTAGCTACAACGA GAGGGAGT	9473
2393	CUCGCCUC G CAGACGAA	1553	TTCGTCTG GGCTAGCTACAACGA GAGGCGAG	9474
2412	UCUCAUUC G CCGCGUCG	1555	CGACGCGG GGCTAGCTACAACGA GATTGAGA	9475
2415	CAAUCGCC G CGUCGCAG	1556	CTGCGACG GGCTAGCTACAACGA GGCGATTG	9476
2420	GCCGCGUC G CAGAAGAU	1557	ATCTTCTG GGCTAGCTACAACGA GACGCGGC	9477
2514	GGUACCUU G CUUUAUUC	1558	GATTAAAG GGCTAGCTACAACGA AAGGTACC	9478
2560	AUUCAUUU G CAGGAGGA	1560	TCCTCCTG GGCTAGCTACAACGA AAATGAAT	9479
2641	UUAACUAU G CCUGCUAG	1563	CTAGCAGG GGCTAGCTACAACGA ATAGTTAA	9480
2645	CUAUGCCU G CUAGGUUU	1564	AAACCTAG GGCTAGCTACAACGA AGGCATAG	9481
2677	AAUAUUUU G CCCUAGA	1565	TCTAAGGG GGCTAGCTACAACGA AAATATTT	9482
2740	UUCACAGAC G CGACAUUA	1566	TAATGTCTG GGCTAGCTACAACGA GTCTGGAA	9483
2804	CACGUAGC G CCUCAUUU	1568	AAATGAGG GGCTAGCTACAACGA GCTACGTG	9484
2814	CUCAUUUU G CGGGUCAC	1569	GTGACCCG GGCTAGCTACAACGA AAAATGAG	9485
2946	UGGACCCU G CAUUCAAA	1572	TTTGAATG GGCTAGCTACAACGA AGGGTCCA	9486
2990	CUCAACCC G CACAAGGA	1573	TCCTTGTTG GGCTAGCTACAACGA GGGTTGAG	9487
3012	GGCCGGAC G CCAACAAG	1574	CTTGTTGG GGCTAGCTACAACGA GTCCGGCC	9488
3090	GCCCUCAC G CUCAGGGC	1575	GCCCTGAG GGCTAGCTACAACGA GTGAGGGC	9489
3113	ACAACUGU G CCAGCAGC	1576	GCTGCTGG GGCTAGCTACAACGA ACAGTTGT	9490
3132	CUCCUCCU G CCUCCACC	1577	GGTGAGAG GGCTAGCTACAACGA AGGAGGAG	9491
51	AGGGCCCU G UACUUUCC	1578	GGAAAGTA GGCTAGCTACAACGA AGGGCCCT	9492
106	AGAAUACU G UCUCUGCC	1579	GGCAGAGA GGCTAGCTACAACGA AGTATTCT	9493

148	GGGACCCU G UACCGAAC	1580	GTTCGGTA GGCTAGCTACAACGA AGGGTCCC	9494
198	CUGCUCGU G UUACAGGC	1581	GCCTGTAA GGCTAGCTACAACGA ACGAGCAG	9495
219	UUUUUCUU G UUGACAAA	1582	TTTGTCAA GGCTAGCTACAACGA AAGAAAAA	9496
297	ACACCCGU G UGUCUUGG	1583	CCAAGACA GGCTAGCTACAACGA ACGGGTGT	9497
299	ACCCGUGU G UCUUGGCC	1584	GGCCAAGA GGCTAGCTACAACGA ACACGGGT	9498
347	ACCAACCU G UUGUCCUC	1585	GAGGACAA GGCTAGCTACAACGA AGGTTGGT	9499
350	AACCUGUU G UCCUCCAA	1586	TTGGAGGA GGCTAGCTACAACGA AACAGGTT	9500
362	UCCAAUUU G UCCUGGUU	1587	AACCAGGA GGCTAGCTACAACGA AAATTGGA	9501
381	CGCUGGAU G UGUCGCG	1588	CGCAGACA GGCTAGCTACAACGA ATCCAGCG	9502
383	CUGGAUGU G UCUGCGGC	1589	GCCGCAGA GGCTAGCTACAACGA ACATCCAG	9503
438	AUCUUCUU G UUGGUUCU	1590	AGAACCAA GGCTAGCTACAACGA AAGAAGAT	9504
465	CAAGGUAU G UUGCCCGU	1591	ACGGGCAA GGCTAGCTACAACGA ATACCTTG	9505
476	GCCCCUUU G UCCUCUAA	1592	TTAGAGGA GGCTAGCTACAACGA AAACGGGC	9506
555	ACCUCUAU G UUUCCUC	1593	GAGGGAAA GGCTAGCTACAACGA ATGAGGTT	9507
566	UCCCUCAU G UUGCUGUA	1594	TACAGCAA GGCTAGCTACAACGA ATGAGGGA	9508
572	AUGUUGCU G UACAAAAC	1595	GTTTTGTA GGCTAGCTACAACGA AGCAACAT	9509
602	CUGCACCU G UAUUCCCA	1596	TGGGAATA GGCTAGCTACAACGA AGGTGCAG	9510
694	UGCAUUUU G UUCAGUGG	1597	CCACTGAA GGCTAGCTACAACGA AAATGGCA	9511
724	CCCCCACU G UCUGGCUU	1598	AAGCCAGA GGCTAGCTACAACGA AGTGGGGG	9512
750	UGGAUGAU G UGUUUUUG	1599	CAAAACCA GGCTAGCTACAACGA ATCATCCA	9513
771	CCAAGUCU G UACAACAU	1600	ATGTTGTA GGCTAGCTACAACGA AGACTTGG	9514
801	AUGCCGCU G UUACCAAU	1601	ATTGGTAA GGCTAGCTACAACGA AGCGGCAT	9515
818	UUUCUUUU G UCUUUGGG	1602	CCCAAAGA GGCTAGCTACAACGA AAAAGAAA	9516
888	UGGGAUUAU G UAAUUGGG	1603	CCCAATTA GGCTAGCTACAACGA ATATCCCA	9517
927	AACAUAUU G UACAAAAA	1604	TTTTTGTA GGCTAGCTACAACGA AATATGTT	9518
944	AUCAAAAU G UGUUUUAG	1605	CTAAAACA GGCTAGCTACAACGA ATTTTGAT	9519
946	CAAAUGU G UUUUAGGA	1606	TCCTAAAA GGCTAGCTACAACGA ACATTTTG	9520
963	AACUUGCU G UAAACAGG	1607	CCTGTTTA GGCTAGCTACAACGA AGGAAGTT	9521
991	GAAAGUAU G UCAACGAA	1608	TTCGTTGA GGCTAGCTACAACGA ATACTTTC	9522
1002	AACGAAUU G UGGGUCUU	1609	AAGACCCA GGCTAGCTACAACGA AATTCGTT	9523
1039	CACGCAAU G UGGAUUAU	1610	AATATCCA GGCTAGCTACAACGA ATTGCGTG	9524
1137	AACAGUAU G UGAACCUU	1611	AAGGTTCA GGCTAGCTACAACGA ATACTGTT	9525
1184	UGCCAAGU G UUUGCUGA	1612	TCAGCAAA GGCTAGCTACAACGA ACTTGCCA	9526
1251	GAACCUUU G UGUCUCCU	1613	AGGAGACA GGCTAGCTACAACGA AAAGGTTT	9527
1253	ACCUUUGU G UCUCUCU	1614	AGAGGAGA GGCTAGCTACAACGA ACAAGGTT	9528
1294	AGCCGCUU G UUUUGCUC	1615	GAGCAAAA GGCTAGCTACAACGA AAGCGGCT	9529
1344	ACAAUUCU G UCGUGCUC	1616	GAGCACGA GGCTAGCTACAACGA AGAATTGT	9530
1390	GCUAGGCU G UGUGCCA	1617	TGGCAGCA GGCTAGCTACAACGA AGCCTAGC	9531
1425	CGUCCUUU G UUUACGUC	1618	GACGTAAA GGCTAGCTACAACGA AAAGGACG	9532
1508	CGCCUAUU G UACCGACC	1619	GGTCGGTA GGCTAGCTACAACGA AATAGGCG	9533
1557	CCCCGUCU G UGCCUUCU	1620	AGAAGGCA GGCTAGCTACAACGA AGACGGGG	9534
1581	CGGACCGU G UGCACUUC	1621	GAAGTGCA GGCTAGCTACAACGA ACGGTCCG	9535
1684	UCAGCAAU G UCAACGAC	1622	GTCGTTGA GGCTAGCTACAACGA ATTGCTGA	9536
1719	CAAAGACU G UGUGUUUA	1623	TAAACACA GGCTAGCTACAACGA AGTCTTTG	9537
1721	AAGACUGU G UGUUUAU	1624	ATTAAACA GGCTAGCTACAACGA ACAGTCTT	9538
1723	GACUGUGU G UUUAAUGA	1625	TCATTAAG GGCTAGCTACAACGA ACACAGTC	9539
1772	AGGUCUUU G UACUAGGA	1626	TCCTAGTA GGCTAGCTACAACGA AAAGACCT	9540
1785	AGGAGGCU G UAGGCAUA	1627	TATGCCTA GGCTAGCTACAACGA AGCCTCCT	9541
1801	AAAUUGGU G UGUUCACC	1628	GGTGAACA GGCTAGCTACAACGA ACCAATTT	9542
1803	AUUGGUGU G UUCACCAG	1629	CTGGTGAA GGCTAGCTACAACGA ACACCAAT	9543
1850	CAUCUCAU G UUCAUGUC	1630	GACATGAA GGCTAGCTACAACGA ATGAGATG	9544

1856	AUGUUCAU G UCCUACUG	1631	CAGTAGGA GGCTAGCTACAACGA ATGAACAT	9545
1864	GUCCUACU G UUCAAGCC	1632	GGCTTGAA GGCTAGCTACAACGA AGTAGGAC	9546
1881	UCCAAGCU G UGCCUUGG	1633	CCAAGGCA GGCTAGCTACAACGA AGCTTGGA	9547
1939	GAGCUUCU G UGGAGUUA	1634	TAACTCCA GGCTAGCTACAACGA AGAAGCTC	9548
2013	UCUGCUCU G UAUCCGGG	1635	CCCCGATA GGCTAGCTACAACGA AGAGCAGA	9549
2045	GGAACAUU G UUCACCUC	1636	GAGGTGAA GGCTAGCTACAACGA AATGTTCC	9550
2082	GCUAUUCU G UGUUGGGG	1637	CCCCAACA GGCTAGCTACAACGA AGAATAGC	9551
2084	UAUUCUGU G UUGGGGUG	1638	CACCCCAA GGCTAGCTACAACGA ACAGAATA	9552
2167	UCAGCUAU G UCAACGUU	1639	AACGTTGA GGCTAGCTACAACGA ATAGCTGA	9553
2205	CAACUAUU G UGGUUUCA	1640	TGAAACCA GGCTAGCTACAACGA AATAGTTG	9554
2222	CAUUUCCU G UCUUACUU	1641	AAGTAAGA GGCTAGCTACAACGA AGGAAATG	9555
2245	GAGAAACU G UUCUUGAA	1642	TTCAAGAA GGCTAGCTACAACGA AGTTTCTC	9556
2262	UAUUUGGU G UCUUUUGG	1643	CCAAAAGA GGCTAGCTACAACGA ACCAAATA	9557
2274	UUUGGAGU G UGGAUUCG	1644	CGAATCCA GGCTAGCTACAACGA ACTCCAAA	9558
2344	AAACUACU G UUGUUAGA	1645	TCTAACAA GGCTAGCTACAACGA AGTAGTTT	9559
2347	CUACUGUU G UUAGACGA	1646	TCGTCTAA GGCTAGCTACAACGA AACAGTAG	9560
2450	AUCUCAAU G UUAGUAUU	1647	AATACTAA GGCTAGCTACAACGA ATTGAGAT	9561
2573	AGGACAUU G UUGAUAGA	1648	TCTATCAA GGCTAGCTACAACGA AATGTCTT	9562
2583	UGAUAGAU G UAAGCAAU	1649	ATTGCTTA GGCTAGCTACAACGA ATCTATCA	9563
2594	AGCAAUUU G UGGGGCCC	1650	GGGCCCCA GGCTAGCTACAACGA AAATTGCT	9564
2663	AUCCCAAU G UUAUAAA	1651	TTTAGTAA GGCTAGCTACAACGA ATTGGGAT	9565
2717	CAGAGUAU G UAGUUAUU	1652	ATTAATA GGCTAGCTACAACGA ATACTCTG	9566
2901	AUCUUUCU G UCCCCAAU	1653	ATTGGGGA GGCTAGCTACAACGA AGAAAGAT	9567
3071	GGGGGACU G UUGGGGUG	1654	CACCCCAA GGCTAGCTACAACGA AGTCCCCC	9568
3111	UCACAACU G UGCCAGCA	1655	TGCTGGCA GGCTAGCTACAACGA AGTTGTGA	9569
40	AUCCCAGA G UCAGGGCC	1656	GGCCCTGA GGCTAGCTACAACGA TCTGGGAT	9570
46	GAGUCAGG G CCCUGUAC	1657	GTACAGGG GGCTAGCTACAACGA CCTGACTC	9571
65	UCCUGCUG G UGGUCCA	1658	TGGAGCCA GGCTAGCTACAACGA CAGCAGGA	9572
68	UGCUGGUG G CUCCAGUU	1659	AACTGGAG GGCTAGCTACAACGA CACCAGCA	9573
74	UGGCUCCA G UUCAGGAA	1660	TTCTTGAA GGCTAGCTACAACGA TGGAGCCA	9574
85	CAGGAACA G UGAGCCCU	1661	AGGGCTCA GGCTAGCTACAACGA TGTTCTCTG	9575
89	AACAGUGA G CCCUGCUC	1662	GAGCAGGG GGCTAGCTACAACGA TCACTGTT	9576
120	GCCAUUUC G UCAAUCUU	1663	AAGATTGA GGCTAGCTACAACGA GATATGGC	9577
196	CCCUGCUC G UGUUACAG	1664	CTGTAACA GGCTAGCTACAACGA GAGCAGGG	9578
205	UGUUACAG G CGGGGUUU	1665	AAACCCCG GGCTAGCTACAACGA CTGTAACA	9579
210	CAGGCGGG G UUUUUCUU	1666	AAGAAAAA GGCTAGCTACAACGA CCCGCCTG	9580
248	ACCACAGA G UCUAGACU	1667	AGTCTAGA GGCTAGCTACAACGA TCTGTGGT	9581
258	CUAGACUC G UGGUGGAC	1668	GTCCACCA GGCTAGCTACAACGA GAGTCTAG	9582
261	GACUCGUG G UGGACUUC	1669	GAAGTCCA GGCTAGCTACAACGA CACGAGTC	9583
295	GAACACCC G UGUGUCUU	1670	AAGACACA GGCTAGCTACAACGA GGGTGTTC	9584
305	GUGUCUUG G CCAAAAUU	1671	AATTTTGG GGCTAGCTACAACGA CAAGACAC	9585
318	AAUUCGCA G UCCCAAUU	1672	ATTTGGGA GGCTAGCTACAACGA TGCGAATT	9586
332	AAUCUCCA G UCACUCAC	1673	GTGAGTGA GGCTAGCTACAACGA TGGAGATT	9587
368	UUGUCCUG G UUAUCGCU	1674	AGCGATAA GGCTAGCTACAACGA CAGGACAA	9588
390	UGUCUGCG G CGUUUAUU	1675	ATAAAACG GGCTAGCTACAACGA CGCAGACA	9589
392	UCUGCGGC G UUUUAUCA	1676	TGATAAAA GGCTAGCTACAACGA GCCGAGA	9590
442	UCUUGUUG G UUCUUCUG	1677	CAGAAGAA GGCTAGCTACAACGA CAACAAGA	9591
461	CUAUCUAG G UAUGUUGC	1678	GCAACATA GGCTAGCTACAACGA CTTGATAG	9592
472	UGUUGCCC G UUUGUCCU	1679	AGGACAAA GGCTAGCTACAACGA GGGCAACA	9593
506	AACAACCA G CACCGGAC	1680	GTCCGGTG GGCTAGCTACAACGA TGGTTGTT	9594
625	CAUCUUGG G CUUUCGCA	1681	TGCGAAAG GGCTAGCTACAACGA CCAAGATG	9595

648	CUAUGGGA G UGGGCCUC	1682	GAGGCCCA GGCTAGCTACAACGA TCCCATAG	9596
652	GGGAGUGG G CCUCAGUC	1683	GACTGAGG GGCTAGCTACAACGA CCACTCCC	9597
658	GGGCCUCA G UCCGUUUC	1684	GAAACGGA GGCTAGCTACAACGA TGAGGCCC	9598
662	CUCAGUCC G UUUUCUUU	1685	AAGAGAAA GGCTAGCTACAACGA GGACTGAG	9599
672	UUCUCUUG G CUCAGUUU	1686	AAACTGAG GGCTAGCTACAACGA CAAGAGAA	9600
677	UUGGCUCA G UUUACUAG	1687	CTAGTAAA GGCTAGCTACAACGA TGAGCCAA	9601
685	GUUUACUA G UGCCAUUU	1688	AAATGGCA GGCTAGCTACAACGA TAGTAAAC	9602
699	UUUGUUCA G UGGUUCGU	1689	ACGAACCA GGCTAGCTACAACGA TGAACAAA	9603
702	GUUCAGUG G UUCGUAGG	1690	CCTACGAA GGCTAGCTACAACGA CACTGAAC	9604
706	AGUGGUUC G UAGGCUU	1691	AAGCCCTA GGCTAGCTACAACGA GAACCACT	9605
711	UUCGUAGG G CUUUCCCC	1692	GGGGAAAG GGCTAGCTACAACGA CCTACGAA	9606
729	ACUGUCUG G CUUUCAGU	1693	ACTGAAAG GGCTAGCTACAACGA CAGACAGT	9607
736	GGCUUUCA G UUAUAUGG	1694	CCATATAA GGCTAGCTACAACGA TGAAAGCC	9608
753	AUGAUGUG G UUUUGGGG	1695	CCCCAAAA GGCTAGCTACAACGA CACATCAT	9609
762	UUUUGGGG G CCAAGUCU	1696	AGACTTGG GGCTAGCTACAACGA CCCCCAAA	9610
767	GGGGCCAA G UCUGUACA	1697	TGTACAGA GGCTAGCTACAACGA TTGGCCCC	9611
785	CAUCUUGA G UCCCUUUA	1698	TAAAGGGA GGCTAGCTACAACGA TCAAGATG	9612
826	GUCUUUGG G UAUACAUU	1699	AATGTATA GGCTAGCTACAACGA CCAAAGAC	9613
898	AAUUGGGA G UUGGGGCA	1700	TGCCCCAA GGCTAGCTACAACGA TCCCAATT	9614
904	GAGUUGGG G CACAUUGC	1701	GCAATGTG GGCTAGCTACAACGA CCAACTTC	9615
971	GUAAACAG G CCUAUUGA	1702	TCAATAGG GGCTAGCTACAACGA CTGTTTAC	9616
987	AUUGGAAA G UAUGUCA	1703	TTGACATA GGCTAGCTACAACGA TTTCCAAT	9617
1006	AAUUGUGG G UCUUUUGG	1704	CCAAAGGA GGCTAGCTACAACGA CCACAATT	9618
1016	CUUUUGGG G UUUGCCGC	1705	GCGGCAAA GGCTAGCTACAACGA CCCAAAAG	9619
1080	GCAUACAA G CAAACAG	1706	CTGTTTGG GGCTAGCTACAACGA TTGTATGC	9620
1089	CAAAACAG G CUUUUACU	1707	AGTAAAGG GGCTAGCTACAACGA CTGTTTGG	9621
1116	CUUACAA G CCUUUCUA	1708	TAGAAAGG GGCTAGCTACAACGA CTTGTAAG	9622
1126	CUUUCUAA G UAAACAGU	1709	ACTGTTTA GGCTAGCTACAACGA TTAGAAGG	9623
1133	AGUAAACA G UAUGUGAA	1710	TTACATA GGCTAGCTACAACGA TGTTTACT	9624
1152	UUUACCCC G UUGCUCGG	1711	CCGAGCAA GGCTAGCTACAACGA GGGGTAAA	9625
1160	GUUGCUCG G CAACGGCC	1712	GGCCGTTG GGCTAGCTACAACGA CGAGCAAC	9626
1166	CGGCAACG G CCUGGUCU	1713	AGACGAGG GGCTAGCTACAACGA CGTTGCCG	9627
1171	ACGGCCUG G UCUAUGCC	1714	GGCATAGA GGCTAGCTACAACGA CAGGCCGT	9628
1182	UAUGCAA G UGUUUGCU	1715	AGCAAACA GGCTAGCTACAACGA TTGGCATA	9629
1207	CCCCACUG G UUGGGGCU	1716	AGCCCCAA GGCTAGCTACAACGA CAGTGGGG	9630
1213	UGGUUGGG G CUUGGCCA	1717	TGGCCAAG GGCTAGCTACAACGA CCCAACCA	9631
1218	GGGGCUUG G CCAUAGGC	1718	GCCTATGG GGCTAGCTACAACGA CAAGCCCC	9632
1225	GGCCAUAG G CCAUCAGC	1719	GCTGATGG GGCTAGCTACAACGA CTATGGCC	9633
1232	GGCCAUCA G CGAUGCG	1720	CGCATGCG GGCTAGCTACAACGA TGATGGCC	9634
1240	GCGCAUGC G UGGAACCU	1721	AGGTTCCA GGCTAGCTACAACGA GCATGCGC	9635
1287	AACUCCUA G CCGCUUGU	1722	ACAAGCGG GGCTAGCTACAACGA TAGGAGTT	9636
1306	UGCUCGCA G CAGGUCUG	1723	CAGACCTG GGCTAGCTACAACGA TCGAGCA	9637
1310	CGCAGCAG G UCUGGGGC	1724	GCCCCAGA GGCTAGCTACAACGA CTGCTGCG	9638
1317	GGUCUGGG G CAAAACUC	1725	GAGTTTTG GGCTAGCTACAACGA CCCAGACC	9639
1347	AUUCUGUC G UGCUCUCC	1726	GGAGAGCA GGCTAGCTACAACGA GACAGAAT	9640
1379	UUUCCAUG G CUGCUAGG	1727	CCTAGCAG GGCTAGCTACAACGA CATGGAAA	9641
1387	GCUGCUAG G CUGUGCUG	1728	CAGCACAG GGCTAGCTACAACGA CTAGCAGC	9642
1418	CGCGGGAC G UCCUUUGU	1729	ACAAAGGA GGCTAGCTACAACGA GTCCCGCG	9643
1431	UUGUUUAC G UCCCGUCG	1730	CGACGGGA GGCTAGCTACAACGA GTAAACAA	9644
1436	UACGUCCC G UCGGCGCU	1731	AGCGCCGA GGCTAGCTACAACGA GGGACGTA	9645
1440	UCCCGUCG G CGCUGAAU	1732	ATTCAGCG GGCTAGCTACAACGA CGACGGGA	9646



1471	CUCCCGGG G CCGCUUGG	1733	CCAAGCGG GGCTAGCTACAACGA CCCGGGAG	9647
1481	CGCUUGGG G CUCUACCG	1734	CGGTAGAG GGCTAGCTACAACGA CCCAAGCG	9648
1517	UACCGACC G UCCACGGG	1735	CCCGTGGA GGCTAGCTACAACGA GGTCCGTA	9649
1526	UCCACGGG G CGCACCU	1736	GAGGTGCG GGCTAGCTACAACGA CCCGTGGA	9650
1553	GACUCCCC G UCUGUGCC	1737	GGCACAGA GGCTAGCTACAACGA GGGGAGTC	9651
1579	GCCGGACC G UGUGCACU	1738	AGTGCACA GGCTAGCTACAACGA GGTCCGGC	9652
1605	CUCUGCAC G UCGCAUGG	1739	CCATGCGA GGCTAGCTACAACGA GTGCAGAG	9653
1622	AGACCACC G UGAACGCC	1740	GGCGTTCA GGCTAGCTACAACGA GGTGGTCT	9654
1649	UGCCCAAG G UCUUGCAU	1741	ATGCAAGA GGCTAGCTACAACGA CTTGGGCA	9655
1679	GACUUUCA G CAUUGUCA	1742	TGACATTG GGCTAGCTACAACGA TGAAAGTC	9656
1703	ACCUUGAG G CAUACUUC	1743	GAAGTATG GGCTAGCTACAACGA CTCAAGGT	9657
1732	UUUAAUGA G UGGGAGGA	1744	TCCTCCCA GGCTAGCTACAACGA TCATTAAA	9658
1741	UGGGAGGA G UUGGGGGA	1745	TCCCCCAA GGCTAGCTACAACGA TCCTCCCA	9659
1754	GGGAGGAG G UUAGGUUA	1746	TAACCTAA GGCTAGCTACAACGA CTCCTCCC	9660
1759	GAGGUUAG G UUAAGGU	1747	ACCTTTAA GGCTAGCTACAACGA CTAACCTC	9661
1766	GGUAAAAG G UCUUGUA	1748	TACAAAGA GGCTAGCTACAACGA CTTTAACC	9662
1782	ACUAGGAG G CUGUAGGC	1749	GCCTACAG GGCTAGCTACAACGA CTCCTAGT	9663
1789	GGCUGUAG G CAUAAAUU	1750	AATTTATG GGCTAGCTACAACGA CTACAGCC	9664
1799	AUAAAUUG G UGUGUUA	1751	TGAACACA GGCTAGCTACAACGA CAATTTAT	9665
1811	GUUACCA G CCAUUGC	1752	GCATGGTG GGCTAGCTACAACGA TGGTGAAC	9666
1870	CUGUUCAA G CCUCCAAG	1753	CTTGGAGG GGCTAGCTACAACGA TTGAACAG	9667
1878	GCCUCCAA G CUGUGCCU	1754	AGGCACAG GGCTAGCTACAACGA TTGGAGGC	9668
1890	UGCCUUGG G UGGCUUUG	1755	CAAAGCCA GGCTAGCTACAACGA CCAAGGCA	9669
1893	CUUGGGUG G CUUUGGGG	1756	CCCCAAAG GGCTAGCTACAACGA CACCCAAG	9670
1901	GCUUUGGG G CAUGGACA	1757	TGTCCATG GGCTAGCTACAACGA CCCAAGC	9671
1917	AUUGACCC G UAUAAGA	1758	TCTTTATA GGCTAGCTACAACGA GGGTCAAT	9672
1933	AAUUUGGA G CUUCUGUG	1759	CACAGAAG GGCTAGCTACAACGA TCCAAATT	9673
1944	UCUGUGGA G UUACUCUC	1760	GAGAGTAA GGCTAGCTACAACGA TCCACAGA	9674
2023	AUCGGGGG G CCUAGAG	1761	CTCTAAGG GGCTAGCTACAACGA CCCCCGAT	9675
2031	GCCUUGA G UCUCCGGA	1762	TCCGAGA GGCTAGCTACAACGA TCTAAGGC	9676
2062	ACCAUACG G CACUCAGG	1763	CCTGAGTG GGCTAGCTACAACGA CGTATGGT	9677
2070	GCACUCAG G CAAGCUAU	1764	ATAGCTTG GGCTAGCTACAACGA CTGAGTGC	9678
2074	UCAGGCAA G CUAUUCUG	1765	CAGAATAG GGCTAGCTACAACGA TTGCCTGA	9679
2090	GUGUUGGG G UGAGUUGA	1766	TCAACTCA GGCTAGCTACAACGA CCCAACAC	9680
2094	UGGGGUGA G UUGAUGAA	1767	TTCATCAA GGCTAGCTACAACGA TCACCCCA	9681
2107	UGAAUCUA G CCACCUGG	1768	CCAGGTGG GGCTAGCTACAACGA TAGATTCA	9682
2116	CCACCUGG G UGGGAAGU	1769	ACTTCCCA GGCTAGCTACAACGA CCAGGTGG	9683
2123	GGUGGGAA G UAAUUUGG	1770	CCAAATTA GGCTAGCTACAACGA TTCCCACC	9684
2140	AAGAUCCA G CAUCCAGG	1771	CCTGGATG GGCTAGCTACAACGA TGGATCTT	9685
2155	GGGAUUUA G UAGUCAGC	1772	GCTGACTA GGCTAGCTACAACGA TAATTCCC	9686
2158	AAUUAGUA G UCAGCUAU	1773	ATAGCTGA GGCTAGCTACAACGA TACTAATT	9687
2162	AGUAGUCA G CUAUGUCA	1774	TGACATAG GGCTAGCTACAACGA TGACTACT	9688
2173	AUGUCAAC G UUAUAUUG	1775	CATATTAA GGCTAGCTACAACGA GTTGACAT	9689
2183	UAAUAUGG G CCUAAAAA	1776	TTTTTAGG GGCTAGCTACAACGA CCATATTA	9690
2208	CUAUUGUG G UUCACAU	1777	ATGTGAAA GGCTAGCTACAACGA CACAATAG	9691
2235	ACUUUUGG G CGAGAAAC	1778	GTTTCTCG GGCTAGCTACAACGA CCAAAAGT	9692
2260	AAUAUUUG G UGUCUUUU	1779	AAAAGACA GGCTAGCTACAACGA CAAATATT	9693
2272	CUUUUGGA G UGUGGAUU	1780	AATCCACA GGCTAGCTACAACGA TCCAAAAG	9694
2360	ACGAAGAG G CAGGUCCC	1781	GGGACCTG GGCTAGCTACAACGA CTCTTCGT	9695
2364	AGAGGCAG G UCCCCUAG	1782	CTAGGGGA GGCTAGCTACAACGA CTGCCTCT	9696
2403	AGACGAAG G UCUCAAUC	1783	GATTGAGA GGCTAGCTACAACGA CTTCGTCT	9697

2417	AUCGCCGC G UCGCAGAA	1784	TTCTGCGA GGCTAGCTACAACGA GCGGCGAT	9698
2454	CAAUGUUA G UAUUCCUU	1785	AAGGAATA GGCTAGCTACAACGA TAACATTG	9699
2474	CACAUAA G UGGGAAAC	1786	GTTTCCCA GGCTAGCTACAACGA CTTATGTG	9700
2491	UUUACGGG G CUUUAUUC	1787	GAATAAAG GGCTAGCTACAACGA CCCGTAAG	9701
2507	CUUCUACG G UACCUUGC	1788	GCAAGGTA GGCTAGCTACAACGA CGTAGAAG	9702
2530	CCUAAAUG G CAAACUCC	1789	GGAGTTTG GGCTAGCTACAACGA CATTTAGG	9703
2587	AGAUGUAA G CAAUUGU	1790	ACAAATTG GGCTAGCTACAACGA TTACATCT	9704
2599	UUUGUGGG G CCCCUIAC	1791	GTAAGGGG GGCTAGCTACAACGA CCCACAAA	9705
2609	CCCUUACA G UAAAUGAA	1792	TTCATTTA GGCTAGCTACAACGA TGTAAGGG	9706
2650	CCUGCUAG G UUUUAUCC	1793	GGATAAAA GGCTAGCTACAACGA CTAGCAGG	9707
2701	AUCAAACC G UAUUAUCC	1794	GGATAATA GGCTAGCTACAACGA GGTGTTGAT	9708
2713	UAUCCAGA G UAUGUAGU	1795	ACTACATA GGCTAGCTACAACGA TCTGGATA	9709
2720	AGUAUGUA G UUAUAUCAU	1796	ATGATTAA GGCTAGCTACAACGA TACATACT	9710
2768	UUUGGAAG G CGGGGAUC	1797	GATCCCCG GGCTAGCTACAACGA CTTCCAAA	9711
2791	AAAAGAGA G UCCACACG	1798	CGTGTGGA GGCTAGCTACAACGA TCTCTTTT	9712
2799	GUCCACAC G UAGCGCCU	1799	AGGCGCTA GGCTAGCTACAACGA GTGTGGAC	9713
2802	CACACGUA G CGCCUCAU	1800	ATGAGGCG GGCTAGCTACAACGA TACGTGTG	9714
2818	UUUGCGG G UCACCAUA	1801	TATGGTGA GGCTAGCTACAACGA CCGCAAAA	9715
2848	GAUCUACA G CAUGGGAG	1802	CTCCCATG GGCTAGCTACAACGA TGTAAGATC	9716
2857	CAUGGGAG G UUGGUCUU	1803	AAGACCAA GGCTAGCTACAACGA CTCCCATG	9717
2861	GGAGGUUG G UCUUCCAA	1804	TTGGAAGA GGCTAGCTACAACGA CAACCTCC	9718
2881	UCGAAAAG G CAUGGGGA	1805	TCCCATG GGCTAGCTACAACGA CTTTTCGA	9719
2936	GAUCAUCA G UUGGACCC	1806	GGGTCCAA GGCTAGCTACAACGA TGATGATC	9720
2955	CAUUCAAA G CCAACUCA	1807	TGAGTTGG GGCTAGCTACAACGA TTTGAATG	9721
2964	CCAACUCA G UAAAUCCA	1808	TGGATTTA GGCTAGCTACAACGA TGAGTTGG	9722
3005	GACAACUG G CCGGACGC	1809	GCGTCCGG GGCTAGCTACAACGA CAGTTGTC	9723
3021	CCAACAAG G UGGGAGUG	1810	CACTCCCA GGCTAGCTACAACGA CTTGTTGG	9724
3027	AGGUGGGA G UGGGAGCA	1811	TGCTCCCA GGCTAGCTACAACGA TCCCACTT	9725
3033	GAGUGGGA G CAUUCGGG	1812	CCGGAATG GGCTAGCTACAACGA TCCCACTC	9726
3041	GCAUUCGG G CCAGGGUU	1813	AACCTTGG GGCTAGCTACAACGA CCGAATGC	9727
3047	GGGCCAGG G UUCACCCC	1814	GGGGTGAA GGCTAGCTACAACGA CCTGGCCC	9728
3077	CUGUUGGG G UGGAGCCC	1815	GGGCTCCA GGCTAGCTACAACGA CCAACAG	9729
3082	GGGUGGGA G CCCUCACG	1816	CGTGAGGG GGCTAGCTACAACGA TCCACCCC	9730
3097	CGCUCAGG G CCUACUCA	1817	TGAGTAGG GGCTAGCTACAACGA CCTGAGCG	9731
3117	CUGUGCCA G CAGCUCCU	1818	AGGAGCTG GGCTAGCTACAACGA TGGCACAG	9732
3120	UGCCAGCA G CUCCUCCU	1819	AGGAGGAG GGCTAGCTACAACGA TGCTGGCA	9733
3146	ACCAAUCG G CAGUCAGG	1820	CCTGACTG GGCTAGCTACAACGA CGATTGGT	9734
3149	AAUCGGCA G UCAGGAAG	1821	CTTCTGTA GGCTAGCTACAACGA TGCCGATT	9735
3158	UCAGGAAG G CAGCCUAC	1822	GTAGGCTG GGCTAGCTACAACGA CTTCTGTA	9736
3161	GGAAGGCA G CCUACUCC	1823	GGAGTAGG GGCTAGCTACAACGA TGCCTTCC	9737
3204	AUCCUCAG G CCAUGCAG	1824	CTGCATGG GGCTAGCTACAACGA CTGAGGAT	9738
10	ACUCCACC A CUUCCAC	703	GTGGAAAG GGCTAGCTACAACGA GGTGGAGT	9739
17	CACUUUCC A CCAAACUC	706	GAGTTTGG GGCTAGCTACAACGA GGAAAGTG	9740
22	UCCACCAA A CUCUCAA	1825	TTGAAGAG GGCTAGCTACAACGA TTGGTGGA	9741
32	UCUUAAG A UCCAGAG	1826	CTCTGGGA GGCTAGCTACAACGA CTTGAAGA	9742
53	GGCCUGU A CUUCCUG	42	CAGGAAGG GGCTAGCTACAACGA ACAGGGCC	9743
82	GUUCAGGA A CAGUGAGC	1827	GCTCACTG GGCTAGCTACAACGA TCCTGAAC	9744
101	UGCUCAGA A UACUGUCU	1828	AGACACTA GGCTAGCTACAACGA TCTGAGCA	9745
103	CUCAGAAU A CUGUCUCU	50	AGAGACAG GGCTAGCTACAACGA ATTCTGAG	9746
115	UCUCUGCC A UAUCGUCA	737	TGACGATA GGCTAGCTACAACGA GGCAGAGA	9747
117	UCUGCCAU A UCGUCAU	53	ATTGACGA GGCTAGCTACAACGA ATGGCAGA	9748

124	UAUCGUCA A UCUIAUCG	1829	CGATAAGA GGCTAGCTACAACGA TGACGATA	9749
129	UCAAUUUU A UCGAAGAC	58	GTCTTCGA GGCTAGCTACAACGA AAGATTGA	9750
136	UAUCGAAG A CUGGGGAC	1830	GTCCCCAG GGCTAGCTACAACGA CTTGCGATA	9751
143	GACUGGGG A CCCUGUAC	1831	GTACAGGG GGCTAGCTACAACGA CCCCAGTC	9752
150	GACCCUGU A CCGAACAU	60	ATGTTCGG GGCTAGCTACAACGA ACAGGGTC	9753
155	UGUACCGA A CAUGGAGA	1832	TCTCCATG GGCTAGCTACAACGA TCGGTACA	9754
157	UACCGAAC A UGGAGAAC	745	GTTCTCCA GGCTAGCTACAACGA GTTCGGTA	9755
164	CAUGGAGA A CAUCGCAU	1833	ATGCGATG GGCTAGCTACAACGA TCTCCATG	9756
166	UGGAGAAC A UCGCAUCA	746	TGATGCGA GGCTAGCTACAACGA GTTCTCCA	9757
171	AACAUCGC A UCAGGACU	747	AGTCCTGA GGCTAGCTACAACGA GCGATGTT	9758
177	GCAUCAGG A CUCCUAGG	1834	CCTAGGAG GGCTAGCTACAACGA CCTGATGC	9759
186	CUCCUAGG A CCCUGCU	1835	AGCAGGGG GGCTAGCTACAACGA CCTAGGAG	9760
201	CUCGUGUU A CAGGCGGG	67	CCCGCCTG GGCTAGCTACAACGA AACACGAG	9761
223	UCUUGUUG A CAAAAUC	1836	GATTTTTG GGCTAGCTACAACGA CAACAAGA	9762
229	UGACAAAA A UCCUCACA	1837	TGTGAGGA GGCTAGCTACAACGA TTTGTCTA	9763
235	AAAUCCUC A CAUACCA	762	TGGTATTG GGCTAGCTACAACGA GAGGATT	9764
238	UCCUCACA A UACCACAG	1838	CTGTGGTA GGCTAGCTACAACGA TGTGAGGA	9765
240	CUCACAAU A CCACAGAG	77	CTCTGTGG GGCTAGCTACAACGA ATTGTGAG	9766
243	ACAAUACC A CAGAGUCU	765	AGACTCTG GGCTAGCTACAACGA GGTATTGT	9767
254	GAGUCUAG A CUCGUGGU	1839	ACCACGAG GGCTAGCTACAACGA CTAGACTC	9768
265	CGUGGUGG A CUUCUCUC	1840	GAGAGAAG GGCTAGCTACAACGA CCACCACG	9769
275	UUCUCUCA A UUUUCUAG	1841	CTAGAAAA GGCTAGCTACAACGA TGAGAGAA	9770
289	UAGGGGGA A CACCGUG	1842	CACGGGTG GGCTAGCTACAACGA TCCCCCTA	9771
291	GGGGGAAC A CCCUGUG	774	CACACGGG GGCTAGCTACAACGA GTTCCCCC	9772
311	UGGCCAAA A UUCGCAGU	1843	ACTGCGAA GGCTAGCTACAACGA TTTGGCCA	9773
325	AGUCCCAA A UCUCAGU	1844	ACTGGAGA GGCTAGCTACAACGA TTGGGACT	9774
335	CUCCAGUC A CUCACCAA	787	TTGGTGAG GGCTAGCTACAACGA GACTGGAG	9775
339	AGUCACUC A CCAACCG	789	CAGGTTGG GGCTAGCTACAACGA GAGTGAAT	9776
343	ACUCACCA A CCUGUUGU	1845	ACAACAGG GGCTAGCTACAACGA TGGTGAGT	9777
358	GUCCUCCA A UUUGUCCU	1846	AGGACAAA GGCTAGCTACAACGA TGGAGGAC	9778
371	UCCUGGUU A UCGCUGGA	106	TCCAGCGA GGCTAGCTACAACGA AACCAGGA	9779
379	AUCGCUGG A UGUGUCUG	1847	CAGACACA GGCTAGCTACAACGA CCAGCGAT	9780
397	GGCGUUUU A UCAUCUUC	112	GAAGATGA GGCTAGCTACAACGA AAAACGCC	9781
400	GUUUUAUC A UCUCUCUC	802	GAGGAAGA GGCTAGCTACAACGA GATAAAAC	9782
412	UCCUCUGC A UCCUGCUG	807	CAGCAGGA GGCTAGCTACAACGA GCAGAGGA	9783
423	CUGCUGCU A UGCCUCAU	119	ATGAGGCA GGCTAGCTACAACGA AGCAGCAG	9784
430	UAUGCCUC A UCUCUCUG	814	CAAGAAGA GGCTAGCTACAACGA GAGGCATA	9785
452	UCUUCUGG A CUAUCAAG	1848	CTTGATAG GGCTAGCTACAACGA CCAGAAGA	9786
455	UCUGGACU A UCAAGGUA	130	TACCTTGA GGCTAGCTACAACGA AGTCCAGA	9787
463	AUCAAGGU A UGUUGCCC	132	GGGCAACA GGCTAGCTACAACGA ACCTTGAT	9788
484	GUCCUCUA A UUCAGGA	1849	TCCTGGAA GGCTAGCTACAACGA TAGAGGAC	9789
492	AUUCAGG A UCAUCAAC	1850	GTTGATGA GGCTAGCTACAACGA CCTGGAAT	9790
495	CCAGGAUC A UCAACAAC	828	GTTGTTGA GGCTAGCTACAACGA GATCCTGG	9791
499	GAUCAUCA A CAACGAGC	1851	GCTGGTTG GGCTAGCTACAACGA TGATGATC	9792
502	CAUCAACA A CCAGCACC	1852	GGTGCTGG GGCTAGCTACAACGA TGTGATG	9793
513	AGCACCGG A CCAUGCAA	1853	TTGCATGG GGCTAGCTACAACGA CCGGTGCT	9794
516	ACCGGACC A UGCAAAAC	836	GTTTTGCA GGCTAGCTACAACGA GGTCCGGT	9795
523	CAUGCAAA A CCUGCACA	1854	TGTGCAGG GGCTAGCTACAACGA TTTGCATG	9796
529	AAACCGUC A CAACUCCU	840	AGGAGTTG GGCTAGCTACAACGA GCAGGTTT	9797
532	CCUGCACA A CUCCUGCU	1855	AGCAGGAG GGCTAGCTACAACGA TGTGCAGG	9798
547	CUCAAGGA A CCUCUAUG	1856	CATAGAGG GGCTAGCTACAACGA TCCTTGAG	9799

553	GAACCUCU A UGUUUC	146	GGGAAACA GGCTAGCTACAACGA AGAGGTTC	9800
564	UUUCCUC A UGUUGCUG	853	CAGCAACA GGCTAGCTACAACGA GAGGGAAA	9801
574	GUUGCUGU A CAAAACCU	152	AGGTTTTG GGCTAGCTACAACGA ACAGCAAC	9802
579	UGUACAAA A CCUACGGA	1857	TCCGTAGG GGCTAGCTACAACGA TTTGTACA	9803
583	CAAAACCU A CGGACGGA	153	TCCGTCCG GGCTAGCTACAACGA AGGTTTTG	9804
587	ACCUACGG A CGGAAACU	1858	AGTTTCCG GGCTAGCTACAACGA CCGTAGGT	9805
593	GGACGGAA A CUGCACCU	1859	AGGTGCAG GGCTAGCTACAACGA TTCCGTCC	9806
598	GAAACUGC A CCUGUAUU	859	AATACAGG GGCTAGCTACAACGA GCAGTTTC	9807
604	GCACCUGU A UUCCCAUC	154	GATGGGAA GGCTAGCTACAACGA ACAGGTGC	9808
610	GUAUUCCC A UCCCAUCA	864	TGATGGGA GGCTAGCTACAACGA GGAATAC	9809
615	CCCAUCCC A UCAUCUUG	867	CAAGATGA GGCTAGCTACAACGA GGGATGGG	9810
618	AUCCCAUC A UCUGGGC	868	GCCCAAGA GGCTAGCTACAACGA GATGGGAT	9811
636	UUCGAAA A UACCUAUG	1860	CATAGGTA GGCTAGCTACAACGA TTTGCGAA	9812
638	CGCAAAAU A CCUAUGGG	164	CCCATAGG GGCTAGCTACAACGA ATTTTGGC	9813
642	AAAUACCU A UGGGAGUG	165	CACTCCCA GGCTAGCTACAACGA AGGTATT	9814
681	CUCAGUUU A CUAGUGCC	176	GGCACTAG GGCTAGCTACAACGA AAACGTAG	9815
690	CUAGUGCC A UUUGUUA	884	TGAACAAA GGCTAGCTACAACGA GGCCTAG	9816
721	UUUCCCC A CUGUCUGG	891	CCAGACAG GGCTAGCTACAACGA GGGGGAAA	9817
739	UUUCAGUU A UAUGGAUG	193	CATCCATA GGCTAGCTACAACGA AACTGAAA	9818
741	UCAGUUAU A UGGAUGAU	194	ATCATCCA GGCTAGCTACAACGA ATAACCTGA	9819
745	UUAUAUGG A UGAUGUGG	1861	CCACATCA GGCTAGCTACAACGA CCATATAA	9820
748	UAUGGAUG A UGUGGUUU	1862	AAACCACA GGCTAGCTACAACGA CATCCATA	9821
773	AAGUCUGU A CAACAUCU	199	AGATGTTG GGCTAGCTACAACGA ACAGACTT	9822
776	UCUGUACA A CAUCUUGA	1863	TCAAGATG GGCTAGCTACAACGA TGTACAGA	9823
778	UGUACAAC A UCUUGAGU	900	ACTCAAGA GGCTAGCTACAACGA GTTGTACA	9824
793	GUCCCUUU A UGCCGUG	205	CAGCGGCA GGCTAGCTACAACGA AAAGGGAC	9825
804	CCGUGUU A CCAUUUU	207	AAAATTGG GGCTAGCTACAACGA AACAGCGG	9826
808	UGUUACCA A UUUUCUU	1864	AAAGAAA GGCTAGCTACAACGA TGGTAACA	9827
828	CUUUGGGU A UCAUUUA	218	TAAATGTA GGCTAGCTACAACGA ACCCAAAG	9828
830	UUGGGUUA A CAUUUAAA	219	TTAAATG GGCTAGCTACAACGA ATACCCAA	9829
832	GGGUUAUC A UUUAAACC	911	GTTTAA GGCTAGCTACAACGA GTATACCC	9830
838	ACAUUUA A CCCUCACA	1865	TGTGAGG GGCTAGCTACAACGA TTAATGT	9831
844	AAACCCUC A CAAAACAA	915	TTGTTTTG GGCTAGCTACAACGA GAGGGTTT	9832
849	CUCACAAA A CAAAAGA	1866	TCTTTTTG GGCTAGCTACAACGA TTTGTGAG	9833
857	ACAAAAAG A UGGGGAUA	1867	TATCCCCA GGCTAGCTACAACGA CTTTTGT	9834
863	AGAUGGGG A UAUUCCCU	1868	AGGGAATA GGCTAGCTACAACGA CCCATCT	9835
865	AUGGGGAU A UUCCCUUA	224	TAAGGGAA GGCTAGCTACAACGA ATCCCAT	9836
874	UUCCCUUA A CUUCAUGG	1869	CCATGAAG GGCTAGCTACAACGA TAAGGGAA	9837
879	UUAACUUC A UGGGAUAU	922	ATATCCCA GGCTAGCTACAACGA GAAGTTAA	9838
884	UUAUGGG A UAUGUAAU	1870	ATTACATA GGCTAGCTACAACGA CCCATGAA	9839
886	CAUGGGAU A UGUAAUUG	231	CAATTACA GGCTAGCTACAACGA ATCCCATG	9840
891	GAUAUGUA A UUGGGAGU	1871	ACTCCCAA GGCTAGCTACAACGA TACATATC	9841
906	GUUGGGGC A CAUUGCCA	923	TGGCAATG GGCTAGCTACAACGA GCCCAAC	9842
908	UGGGGCAC A UUGCCACA	924	TGTGGCAA GGCTAGCTACAACGA GTGCCCA	9843
914	ACAUUGCC A CAGGAACA	926	TGTTCTG GGCTAGCTACAACGA GGCAATGT	9844
920	CCACAGGA A CAUAUUGU	1872	ACAATATG GGCTAGCTACAACGA TCCTGTGG	9845
922	ACAGGAAC A UAUUGUAC	928	GTACAATA GGCTAGCTACAACGA GTTCTGT	9846
924	AGGAACAU A UUGUACAA	236	TTGTACAA GGCTAGCTACAACGA ATGTTCT	9847
929	CAUAUUGU A CAAAAAU	238	ATTTTTT GGCTAGCTACAACGA ACAATATG	9848
936	UACAAAAA A UCAAAUUG	1873	CATTTTGA GGCTAGCTACAACGA TTTTGTGA	9849
942	AAAUCAAA A UGUGUUUU	1874	AAAACACA GGCTAGCTACAACGA TTTGATT	9850

956	UUUAGGAA A CUUCCUGU	1875	ACAGGAAG GGCTAGCTACAACGA TTCCTAAA	9851
967	UCCUGUAA A CAGGCCUA	1876	TAGGCCTG GGCTAGCTACAACGA TTACAGGA	9852
975	ACAGGCCU A UUGAUUGG	247	CCAATCAA GGCTAGCTACAACGA AGGCCTGT	9853
979	GCCUAUUG A UUGGAAAG	1877	CTTTCCAA GGCTAGCTACAACGA CAATAGGC	9854
989	UGGAAAGU A UGUCAACG	250	CGTTGACA GGCTAGCTACAACGA ACTTTCCA	9855
995	GUAUGUCA A CGAAUUGU	1878	ACAATTCT GGCTAGCTACAACGA TGACATAC	9856
999	GUCAACGA A UUGUGGGU	1879	ACCCACAA GGCTAGCTACAACGA TCGTTGAC	9857
1032	CCCCUUUC A CGCAAUGU	944	ACATTGCG GGCTAGCTACAACGA GAAAGGGG	9858
1037	UUCACGCA A UGUGGAUA	1880	TATCCACA GGCTAGCTACAACGA TGCCTGAA	9859
1043	CAUGUGG A UAUUCUGC	1881	GCAGAAAT GGCTAGCTACAACGA CCACATTG	9860
1045	AUGUGGAU A UUCUGCUU	262	AAGCAGAA GGCTAGCTACAACGA ATCCACAT	9861
1056	CUGCUUUA A UGCCUUUA	1882	TAAAGGCA GGCTAGCTACAACGA TAAAGCAG	9862
1064	AUGCCUUU A UAUGCAUG	270	CATGCATA GGCTAGCTACAACGA AAAGGCAT	9863
1066	GCCUUUAU A UGCAUGCA	271	TGCATGCA GGCTAGCTACAACGA ATAAAGGC	9864
1070	UUUAUUGC A UGCAUACA	950	TGTATGCA GGCTAGCTACAACGA GCATATAA	9865
1074	AUGCAUGC A UACAAGCA	951	TGCTTGTA GGCTAGCTACAACGA GCATGCAT	9866
1076	GCAUGCAU A CAAGCAAA	272	TTTGCTTG GGCTAGCTACAACGA ATGCATGC	9867
1085	CAAGCAAA A CAGGCUUU	1883	AAAGCCTG GGCTAGCTACAACGA TTTGCTTG	9868
1095	AGGCUUUU A CUUUCUCG	276	CGAGAAAG GGCTAGCTACAACGA AAAAGCCT	9869
1107	UCUCGCCA A CUUACAAG	1884	CTTGTAAG GGCTAGCTACAACGA TGGCGAGA	9870
1111	GCCAACUU A CAAGCCCU	282	AGGCCTTG GGCTAGCTACAACGA AAGTTGGC	9871
1130	CUAAGUAA A CAGUAUGU	1885	ACATACTG GGCTAGCTACAACGA TTACTTAG	9872
1135	UAAACAGU A UGUGAACC	288	GGTTCACA GGCTAGCTACAACGA ACTGTTTA	9873
1141	GUUAUGUA A CCUUUACC	1886	GGTAAAGG GGCTAGCTACAACGA TCACATAC	9874
1147	GAACCUUU A CCCCUGUG	291	CAACGGGG GGCTAGCTACAACGA AAAGGTTC	9875
1163	GCUCGGCA A CGGCCUGG	1887	CCAGGCCG GGCTAGCTACAACGA TGCCGAGC	9876
1175	CCUGGUCU A UGCCAAGU	295	ACTTGCCA GGCTAGCTACAACGA AGACCAGG	9877
1192	GUUUGCUG A CGCAACCC	1888	GGGTGCG GGCTAGCTACAACGA CAGCAAAC	9878
1197	CUGACGCA A CCCCACU	1889	AGTGGGGG GGCTAGCTACAACGA TGCGTCAG	9879
1203	CAACCCCC A CUGGUUGG	984	CCAACCAG GGCTAGCTACAACGA GGGGGTTG	9880
1221	GCUUGGCC A UAGGCCAU	988	ATGGCCTA GGCTAGCTACAACGA GGCCAAGC	9881
1228	CAUAGGCC A UCAGCGCA	990	TGCGCTGA GGCTAGCTACAACGA GGCCTATG	9882
1236	AUCAGCGC A UGCGUGGA	992	TCCACGCA GGCTAGCTACAACGA GCGCTGAT	9883
1245	UGCGUGGA A CCUUUGUG	1890	CACAAAGG GGCTAGCTACAACGA TCCACGCA	9884
1266	CUCUGCCG A UCCAUACC	1891	GGTATGGA GGCTAGCTACAACGA CGGCAGAG	9885
1270	GCCGAUCC A UACCGCGG	1001	CCGCGGTA GGCTAGCTACAACGA GGATCGGC	9886
1272	CGAUCCAU A CCGCGGAA	308	TTCCGCGG GGCTAGCTACAACGA ATGGATCG	9887
1280	ACCGCGGA A CUCCUAGC	1892	GCTAGGAG GGCTAGCTACAACGA TCCGCGGT	9888
1322	GGGGCAAA A CUCAUCGG	1893	CCGATGAG GGCTAGCTACAACGA TTTGCCCC	9889
1326	CAAAACUC A UCGGGACU	1014	AGTCCCGA GGCTAGCTACAACGA GAGTTTGT	9890
1332	UCAUCGGG A CUGACAAU	1894	ATTGTCAG GGCTAGCTACAACGA CCCGATGA	9891
1336	CGGGACUG A CAAUUCUG	1895	CAGAATTG GGCTAGCTACAACGA CAGTCCCG	9892
1339	GACUGACA A UUCUGUCG	1896	CGACAGAA GGCTAGCTACAACGA TGTCAGTC	9893
1361	UCCCGCAA A UAUACAUC	1897	GATGTATA GGCTAGCTACAACGA TTGCGGGA	9894
1363	CCGCAAAU A UACAUCAU	324	ATGATGTA GGCTAGCTACAACGA ATTTGCGG	9895
1365	GCAAAUUA A CAUCAUUU	325	AAATGATG GGCTAGCTACAACGA ATATTTGC	9896
1367	AAAUUAUC A UCAUUUCC	1023	GGAAATGA GGCTAGCTACAACGA GTATATTT	9897
1370	UAUACAUC A UUUCCAUG	1024	CATGGAAA GGCTAGCTACAACGA GATGTATA	9898
1376	UCAUUUCC A UGGCUGCU	1026	AGCAGCCA GGCTAGCTACAACGA GGAAATGA	9899
1399	UGCUGCCA A CUGGAUCC	1898	GGATCCAG GGCTAGCTACAACGA TGGCAGCA	9900
1404	CCAACUGG A UCCUACGC	1899	GCGTAGGA GGCTAGCTACAACGA CCAGTTGG	9901

1409	UGGAUCCU A CGCGGGAC	332	GTCCCGCG GGCTAGCTACAACGA AGGATCCA	9902
1416	UACGCGGG A CGUCCUUU	1900	AAAGGACG GGCTAGCTACAACGA CCCGCGTA	9903
1429	CUUUGUUU A CGUCCCGU	338	ACGGGACG GGCTAGCTACAACGA AAACAAAG	9904
1447	GGCGCUGA A UCCCGCGG	1901	CCGCGGGA GGCTAGCTACAACGA TCAGCGCC	9905
1456	UCCCGCGG A CGACCCCU	1902	AGGGGTCG GGCTAGCTACAACGA CCGCGGGA	9906
1459	CGCGGACG A CCCUCCC	1903	GGGAGGGG GGCTAGCTACAACGA CGTCCCGG	9907
1486	GGGGCUCU A CCGCCCGC	345	GCGGGCGG GGCTAGCTACAACGA AGAGCCCC	9908
1505	CUCCGCCU A UUGUACCG	349	CGGTACAA GGCTAGCTACAACGA AGGCGGAG	9909
1510	CCUAUUGU A CCGACCGU	351	ACGGTCGG GGCTAGCTACAACGA ACAATAGG	9910
1514	UUGUACCG A CCGUCCAC	1904	GTGGACGG GGCTAGCTACAACGA CGGTACAA	9911
1521	GACCGUCC A CGGGCGC	1064	GCGCCCCG GGCTAGCTACAACGA GGACGGTC	9912
1530	CGGGGCGC A CCUCUCUU	1065	AAGAGAGG GGCTAGCTACAACGA GCGCCCCG	9913
1540	CUCUCUUU A CGCGGACU	357	AGTCCGCG GGCTAGCTACAACGA AAAGAGAG	9914
1546	UUACGCGG A CUCCCCGU	1905	ACGGGGAG GGCTAGCTACAACGA CCGCGTAA	9915
1567	GCCUUCUC A UCUGCCGG	1078	CCGGCAGA GGCTAGCTACAACGA GAGAAGGC	9916
1576	UCUGCCGG A CCGUGUGC	1906	GCACACGG GGCTAGCTACAACGA CCGGCAGA	9917
1585	CCGUGUGC A CUUCGCUU	1082	AAGCGAAG GGCTAGCTACAACGA GCACACGG	9918
1595	UUCGUUUC A CCUCUGCA	1085	TGCAGAGG GGCTAGCTACAACGA GAAGCGAA	9919
1603	ACCUCUGC A CGUCGCAU	1089	ATGCGACG GGCTAGCTACAACGA GCAGAGGT	9920
1610	CACGUCGC A UGGAGACC	1090	GGTCTCCA GGCTAGCTACAACGA GCGACGTG	9921
1616	GCAUGGAG A CCACCGUG	1907	CACGGTGG GGCTAGCTACAACGA CTCCATGC	9922
1619	UGGAGACC A CCGUGAAC	1092	GTTACAGG GGCTAGCTACAACGA GGTCTCCA	9923
1626	CACCGUGA A CGCCCACA	1908	TGTGGGCG GGCTAGCTACAACGA TCACGGTG	9924
1638	CCACAGGA A CCUGCCCA	1909	TGGGCAGG GGCTAGCTACAACGA TCCTGTGG	9925
1656	GGUCUUGC A UAAGAGGA	1104	TCCTCTTA GGCTAGCTACAACGA GCAAGACC	9926
1664	AUAAGAGG A CUCUUGGA	1910	TCCAAGAG GGCTAGCTACAACGA CCTCTTAT	9927
1672	ACUCUUGG A CUUUCAGC	1911	GCTGAAAG GGCTAGCTACAACGA CCAAGAGT	9928
1682	UUUCAGCA A UGUCAACG	1912	CGTTGACA GGCTAGCTACAACGA TGCTGAAA	9929
1688	CAAUGUCA A CGACCGAC	1913	GTGCGTCG GGCTAGCTACAACGA TGACATTG	9930
1691	UGUCAACG A CCGACCUU	1914	AAGGTCGG GGCTAGCTACAACGA CGTTGACA	9931
1695	AACGACCG A CCUUGAGG	1915	CCTCAAGG GGCTAGCTACAACGA CCGTCGTT	9932
1705	CUUGAGGC A UACUUCAA	1114	TTGAAGTA GGCTAGCTACAACGA GCCTCAAG	9933
1707	UGAGGCAU A CUUCAAAG	380	CTTTGAAG GGCTAGCTACAACGA ATGCCTCA	9934
1716	CUUCAAAG A CUGUGUGU	1916	ACACACAG GGCTAGCTACAACGA CTTTGAAG	9935
1728	UGUGUUUA A UGAGUGGG	1917	CCCCTCA GGCTAGCTACAACGA TAAACACA	9936
1774	GUCUUUGU A CUAGGAGG	394	CCTCCTAG GGCTAGCTACAACGA ACAAAGAC	9937
1791	CUGUAGGC A UAAAUUGG	1121	CCAATTTA GGCTAGCTACAACGA GCCTACAG	9938
1795	AGGCAUAA A UUGGUGUG	1918	CACACCAA GGCTAGCTACAACGA TTATGCCT	9939
1807	GUGUGUUC A CCAGCACC	1122	GGTGCTGG GGCTAGCTACAACGA GAACACAC	9940
1813	UCACCAGC A CCAUGCAA	1125	TTGCATGG GGCTAGCTACAACGA GCTGGTGA	9941
1816	CCAGCACC A UGCAACUU	1127	AAGTTGCA GGCTAGCTACAACGA GGTGCTGG	9942
1821	ACCAUGCA A CUUUUCA	1919	TGAAAAAG GGCTAGCTACAACGA TGCATGGT	9943
1829	ACUUUUUC A CCUCUGCC	1130	GGCAGAGG GGCTAGCTACAACGA GAAAAAGT	9944
1840	UCUGCCUA A UCAUCUCA	1920	TGAGATGA GGCTAGCTACAACGA TAGGCAGA	9945
1843	GCCUAAUC A UCUCUUGU	1136	ACATGAGA GGCTAGCTACAACGA GATTAGGC	9946
1848	AUCAUCUC A UGUUCAUG	1138	CATGAACA GGCTAGCTACAACGA GAGATGAT	9947
1854	UCAUGUUC A UGUCCUAC	1139	GTAGGACA GGCTAGCTACAACGA GAACATGA	9948
1861	CAUGUCCU A CUGUUCAA	414	TTGAACAG GGCTAGCTACAACGA AGGACATG	9949
1903	UUUGGGGC A UGGACAUU	1152	AATGTCCA GGCTAGCTACAACGA GCCCCAAA	9950
1907	GGGCAUGG A CAUGGACC	1921	GGTCAATG GGCTAGCTACAACGA CCATGCCC	9951
1909	GCAUGGAC A UUGACCCG	1153	CGGGTCAA GGCTAGCTACAACGA GTCCATGC	9952

1913	GGACAUUG A CCCGUAUA	1922	TATACGGG GGCTAGCTACAACGA CAATGTCC	9953
1919	UGACCCGU A UAAAGAAU	422	ATTCTTTA GGCTAGCTACAACGA ACGGGTCA	9954
1926	UAUAAAGA A UUUGGAGC	1923	GCTCCAAA GGCTAGCTACAACGA TCTTTATA	9955
1947	GUGGAGUU A CUCUCUUU	429	AAAGAGAG GGCTAGCTACAACGA AACTCCAC	9956
1967	GCCUUCUG A CUUCUUUC	1924	GAAAGAAG GGCTAGCTACAACGA CAGAAGGC	9957
1981	UUCUUCU A UUCGAGAU	446	ATCTCGAA GGCTAGCTACAACGA AGAAGGAA	9958
1988	UAUUCGAG A UCUCUCUG	1925	CGAGGAGA GGCTAGCTACAACGA CTCGAATA	9959
1997	UCUCUCG A CACCGCCU	1926	AGGCGGTG GGCTAGCTACAACGA CGAGGAGA	9960
1999	UCCUCGAC A CCGCCUCU	1172	AGAGGCGG GGCTAGCTACAACGA GTCGAGGA	9961
2015	UGCUCUGU A UCGGGGGG	454	CCCCCGA GGCTAGCTACAACGA ACAGAGCA	9962
2040	UCUCCGGA A CAUUGUUC	1927	GAACAATG GGCTAGCTACAACGA TCCGAGGA	9963
2042	UCCGGAAC A UUGUUCAC	1183	GTGAACAA GGCTAGCTACAACGA GTTCCGGA	9964
2049	CAUUGUUC A CCUCACCA	1184	TGGTGAGG GGCTAGCTACAACGA GAACAATG	9965
2054	UUCACCUC A CCAUACGG	1187	CCGTATGG GGCTAGCTACAACGA GAGGTGAA	9966
2057	ACCUCACC A UACGGCAC	1189	GTGCCGTA GGCTAGCTACAACGA GGTGAGGT	9967
2059	CUCACCAU A CGGCACUC	464	GAGTGCCG GGCTAGCTACAACGA ATGGTGAG	9968
2064	CAUACGGC A CUCAGGCA	1190	TGCCGTGAG GGCTAGCTACAACGA GCCGTATG	9969
2077	GGCAAGCU A UUCUGUGU	466	ACACAGAA GGCTAGCTACAACGA AGCTTGCC	9970
2098	GUGAGUUG A UGAAUCUA	1928	TAGATTCA GGCTAGCTACAACGA CAACTCAC	9971
2102	GUUGAUGA A UCUAGCCA	1929	TGGCTAGA GGCTAGCTACAACGA TCATCAAC	9972
2110	AUCUAGCC A CUUGGGUG	1198	CACCCAGG GGCTAGCTACAACGA CGTAGAT	9973
2126	GGGAAGUA A UUUGGAAG	1930	CTTCCAAA GGCTAGCTACAACGA TACTTCCC	9974
2135	UUUGGAAG A UCCAGCAU	1931	ATGCTGGA GGCTAGCTACAACGA CTTCCAAA	9975
2142	GAUCCAGC A UCCAGGGA	1203	TCCCTGGA GGCTAGCTACAACGA GCTGGATC	9976
2151	UCCAGGGA A UUAGUAGU	1932	ACTACTAA GGCTAGCTACAACGA TCCCTGGA	9977
2165	AGUCAGCU A UGUCAACG	482	CGTTGACA GGCTAGCTACAACGA AGCTGACT	9978
2171	CUAUGUCA A CGUUAUAU	1933	TATTAACG GGCTAGCTACAACGA TGACATAG	9979
2177	CAACGUUA A UAUGGGCC	1934	GGCCCAT A GGCTAGCTACAACGA TAACGTTG	9980
2179	ACGUUAU A UGGGCCUA	486	TAGGCCCA GGCTAGCTACAACGA ATTAACGT	9981
2191	GCCUAAAA A UCAGACAA	1935	TTGTCTGA GGCTAGCTACAACGA TTTTAGGC	9982
2196	AAAAUCAG A CAACUAU	1936	AATAGTTG GGCTAGCTACAACGA CTGATTTT	9983
2199	AUCAGACA A CUUUGUG	1937	CACAATAG GGCTAGCTACAACGA TGTCTGAT	9984
2202	AGACAAU A UUGUGGUU	489	AACCACAA GGCTAGCTACAACGA AGTTGTCT	9985
2213	GUGGUUUC A CAUUUCCU	1214	AGGAAATG GGCTAGCTACAACGA GAAACCAC	9986
2215	GGUUUCAC A UUUCCUGU	1215	ACAGGAAA GGCTAGCTACAACGA GTGAAACC	9987
2227	CCUGUCUU A CUUUUGGG	499	CCCAAAAG GGCTAGCTACAACGA AAGACAGG	9988
2242	GGCGAGAA A CUGUUCUU	1938	AAGAACAG GGCTAGCTACAACGA TTCTCGCC	9989
2253	GUUCUUGA A UAUUUGGU	1939	ACCAAATA GGCTAGCTACAACGA TCAAGAAC	9990
2255	UCUUGAAU A UUUGGUGU	506	ACACCAAA GGCTAGCTACAACGA ATTCAAGA	9991
2278	GAGUGUGG A UUCGCACU	1940	AGTGCGAA GGCTAGCTACAACGA CCACACTC	9992
2284	GGAUUCGC A CUCCUCCU	1223	AGGAGGAG GGCTAGCTACAACGA GCGAATCC	9993
2295	CCUCCUGC A UAUAGACC	1229	GGTCTATA GGCTAGCTACAACGA CGAGGAGG	9994
2297	UCCUGCAU A UAGACCAC	517	GTGGTCTA GGCTAGCTACAACGA ATGCAGGA	9995
2301	GCAUUAUAG A CCACCAAA	1941	TTTGGTGG GGCTAGCTACAACGA CTATATGC	9996
2304	UAUAGACC A CCAAUAGC	1231	GCATTTGG GGCTAGCTACAACGA GGTCTATA	9997
2309	ACCACCAA A UGCCCCUA	1942	TAGGGGCA GGCTAGCTACAACGA TTGGTGGT	9998
2317	AUGCCCUU A UCUUAUCA	519	TGATAAGA GGCTAGCTACAACGA AGGGGCAT	9999
2322	CCUAUCUU A UCAACACU	522	AGTGTGTA GGCTAGCTACAACGA AAGATAGG	10000
2326	UCUUAUCA A CACUCCG	1943	CGGAAGTG GGCTAGCTACAACGA TGATAAGA	10001
2328	UUAUCAAC A CUUCCGGA	1240	TCCGGAAG GGCTAGCTACAACGA GTTGATAA	10002
2338	UUCCGGAA A CUACUGUU	1944	AACAGTAG GGCTAGCTACAACGA TTCCGGAA	10003



2341	CGGAAACU A CUGUUGUU	526	AACAACAG GGCTAGCTACAACGA AGTTTCCG	10004
2352	GUUGUUAG A CGAAGAGG	1945	CCTCTTCG GGCTAGCTACAACGA CTAACAAC	10005
2380	GAAGAAGA A CUCCCUCG	1946	CGAGGGAG GGCTAGCTACAACGA TCTTCTTC	10006
2397	CCUCGCAG A CGAAGGUC	1947	GACCTTCG GGCTAGCTACAACGA CTGCGAGG	10007
2409	AGGUCUCA A UCGCCGCG	1948	CGCGGCGA GGCTAGCTACAACGA TGAGACCT	10008
2427	CGCAGAAG A UCUCAAUC	1949	GATTGAGA GGCTAGCTACAACGA CTTCTGCG	10009
2433	AGAUCUCA A UCUCGGGA	1950	TCCCGAGA GGCTAGCTACAACGA TGAGATCT	10010
2442	UCUCGGGA A UCUCAAUG	1951	CATTGAGA GGCTAGCTACAACGA TCCCGAGA	10011
2448	GAAUCUCA A UGUUAGUA	1952	TACTAACA GGCTAGCTACAACGA TGAGATTC	10012
2456	AUGUUAGU A UUCCUUGG	547	CCAAGGAA GGCTAGCTACAACGA ACTAACAT	10013
2465	UUCCUUGG A CACAUAAG	1953	CTTATGTG GGCTAGCTACAACGA CCAAGGAA	10014
2467	CCUUGGAC A CAUAAGGU	1268	ACCTTATG GGCTAGCTACAACGA GTCCAAGG	10015
2469	UUGGACAC A UAAGGUGG	1269	CCACCTTA GGCTAGCTACAACGA GTGTCCAA	10016
2481	GGUGGGAA A CUUACGCG	1954	CCGTAAAG GGCTAGCTACAACGA TTCCCAAC	10017
2486	GAAACUUU A CGGGGCUU	554	AAGCCCCG GGCTAGCTACAACGA AAAGTTTC	10018
2496	GGGGCUUU A UUCUUCUA	557	TAGAAGAA GGCTAGCTACAACGA AAAGCCCC	10019
2504	AUUCUUCU A CGGUACCU	562	AGGTACCG GGCTAGCTACAACGA AGAAGAAT	10020
2509	UCUACGGU A CCUUGCUU	563	AAGCAAGG GGCTAGCTACAACGA ACCGTAGA	10021
2520	UUGCUUUA A UCCUAAAU	1955	ATTTAGGA GGCTAGCTACAACGA TAAAGCAA	10022
2527	AAUCCUAA A UGGCAAAC	1956	GTTTGCCA GGCTAGCTACAACGA TTAGGATT	10023
2534	AAUGGCAA A CUCCUUCU	1957	AGAAGGAG GGCTAGCTACAACGA TTGCCATT	10024
2550	UUUCCUG A CAUUCAU	1958	AATGAATG GGCTAGCTACAACGA CAGGAAAA	10025
2552	UUCUGAC A UUCAUUG	1286	CAAATGAA GGCTAGCTACAACGA GTCAGGAA	10026
2556	UGACAUUC A UUUGCAGG	1287	CCTGCAAA GGCTAGCTACAACGA GAATGTCA	10027
2568	GCAGGAGG A CAUUGUUG	1959	CAACAATG GGCTAGCTACAACGA CCTCCTGC	10028
2570	AGGAGGAC A UUGUUGAU	1289	ATCAACAA GGCTAGCTACAACGA GTCCTCCT	10029
2577	CAUUGUUG A UAGAUGUA	1960	TACATCTA GGCTAGCTACAACGA CAACAATG	10030
2581	GUUGAUAG A UGUAAGCA	1961	TGCTTACA GGCTAGCTACAACGA CTATCAAC	10031
2590	UGUAAGCA A UUUGUGGG	1962	CCCACAAA GGCTAGCTACAACGA TGCTTACA	10032
2606	GGCCCCU A CAGUAAAU	588	ATTTACTG GGCTAGCTACAACGA AAGGGGCC	10033
2613	UACAGUAA A UGAAACAA	1963	TGTTTTCA GGCTAGCTACAACGA TTAAGTGA	10034
2619	AAAUGAAA A CAGGAGAC	1964	GTCTCCTG GGCTAGCTACAACGA TTTCATTT	10035
2626	AACAGGAG A CUUAAAUU	1965	AATTTAAG GGCTAGCTACAACGA CTCCTGTT	10036
2632	AGACUAAA A UUAACUAA	1966	ATAGTTAA GGCTAGCTACAACGA TTAAGTCT	10037
2636	UUAAAUUA A CUAUGCCU	1967	AGGCATAG GGCTAGCTACAACGA TAATTTAA	10038
2639	AAUUAACU A UGCCUGCU	594	AGCAGGCA GGCTAGCTACAACGA AGTTAATT	10039
2655	UAGGUUUU A UCCCAAUG	599	CATTGGGA GGCTAGCTACAACGA AAAACCTA	10040
2661	UUAUCCCA A UGUUACUA	1968	TAGTAACA GGCTAGCTACAACGA TGGGATAA	10041
2666	CCAUGUUU A CUAAAUAU	602	ATATTTAG GGCTAGCTACAACGA AACATTGG	10042
2671	GUUACUAA A UAUUUGCC	1969	GGCAAATA GGCTAGCTACAACGA TTAGTAAC	10043
2673	UACUAAAU A UUUGCCCU	604	AGGGCAAA GGCTAGCTACAACGA ATTTAGTA	10044
2685	GCCCUUAG A UAAAGGGA	1970	TCCCTTTA GGCTAGCTACAACGA CTAAGGGC	10045
2693	AUAAAGGG A UCAAACCG	1971	CGGTTTGA GGCTAGCTACAACGA CCCTTTAT	10046
2698	GGGAUCAA A CCGUAUUA	1972	TAATACGG GGCTAGCTACAACGA TTGATCCC	10047
2703	CAAACCGU A UUAUCCAG	611	CTGGATAA GGCTAGCTACAACGA ACGGTTTG	10048
2706	ACCGUAUU A UCCAGAGU	613	ACTCTGGA GGCTAGCTACAACGA AATACGGT	10049
2715	UCCAGAGU A UGUAGUUA	615	TAATAACA GGCTAGCTACAACGA ACTCTGGA	10050
2724	UGUAGUUA A UCAUUACU	1973	AGTAATGA GGCTAGCTACAACGA TAACTACA	10051
2727	AGUUAUUC A UUAUUUCC	1313	GGAAGTAA GGCTAGCTACAACGA GATTAACT	10052
2730	UAAUCAUU A CUUCCAGA	621	TCTGGAAG GGCTAGCTACAACGA AATGATTA	10053
2738	ACUUCAG A CGCGACAU	1974	ATGTCGCG GGCTAGCTACAACGA CTGGAAGT	10054



2743	CAGACGCG A CAUUAUUU	1975	AAATAATG GGCTAGCTACAACGA CGCGTCTG	10055
2745	GACGCGAC A UUAUUUAC	1317	GTAAATAA GGCTAGCTACAACGA GTCGCGTC	10056
2748	GCGACAUU A UUUACACA	625	TGTGTAAA GGCTAGCTACAACGA AATGTCGC	10057
2752	CAUUUAUU A CACACUCU	628	AGAGTGTG GGCTAGCTACAACGA AAATAATG	10058
2754	UUAUUUAC A CACUCUUU	1318	AAAGAGTG GGCTAGCTACAACGA GTAAATAA	10059
2756	AUUUACAC A CUCUUUGG	1319	CCAAAGAG GGCTAGCTACAACGA GTGTAAAT	10060
2774	AGGCGGGG A UCUUAUUA	1976	ATATAAGA GGCTAGCTACAACGA CCCC GCCT	10061
2779	GGGAUCUU A UAUAAAAG	634	CTTTTATA GGCTAGCTACAACGA AAGATCCC	10062
2781	GAUCUUAU A UAAAAGAG	635	CTCTTTTA GGCTAGCTACAACGA ATAAGATC	10063
2795	GAGAGUCC A CACGUAGC	1324	GCTACGTG GGCTAGCTACAACGA GGACTCTC	10064
2797	GAGUCCAC A CGUAGCGC	1325	GCGCTACG GGCTAGCTACAACGA GTGGACTC	10065
2809	AGCGCCUC A UUUUGCGG	1328	CCGCAAAA GGCTAGCTACAACGA GAGGCGCT	10066
2821	UGCGGGUC A CCAUAUUC	1329	GAATATGG GGCTAGCTACAACGA GACCCGCA	10067
2824	GGGUCACC A UAUUCUUG	1331	CAAGAATA GGCTAGCTACAACGA GGTGACCC	10068
2826	GUCACCAU A UUCUUGGG	644	CCCAAGAA GGCTAGCTACAACGA ATGGTGAC	10069
2836	UCUUGGGA A CAAGAUCU	1977	AGATCTTG GGCTAGCTACAACGA TCCCAAGA	10070
2841	GGAAACAAG A UCUACAGC	1978	GCTGTAGA GGCTAGCTACAACGA CTTGTTCC	10071
2845	CAAGAUCU A CAGCAUGG	649	CCATGCTG GGCTAGCTACAACGA AGATCTTG	10072
2850	UCUACAGC A UGGGAGGU	1336	ACCTCCCA GGCTAGCTACAACGA GCTGTAGA	10073
2870	UCUCCAA A CCUCGAAA	1979	TTTCGAGG GGCTAGCTACAACGA TTGGAAGA	10074
2883	GAAAAGGC A UGGGGACA	1342	TGTCCCCA GGCTAGCTACAACGA GCCTTTTC	10075
2889	GCAUGGGG A CAAAUUUU	1980	AAGATTTG GGCTAGCTACAACGA CCCCATGC	10076
2893	GGGGACAA A UCUIUCUG	1981	CAGAAAGA GGCTAGCTACAACGA TTGTCCCC	10077
2908	UGUCCCCA A UCCCCUGG	1982	CCAGGGGA GGCTAGCTACAACGA TGGGGACA	10078
2918	CCCCUGGG A UUCUCCCC	1983	GGGAAGAA GGCTAGCTACAACGA CCCAGGGG	10079
2929	CUUCCCCG A UCAUCAGU	1984	ACTGATGA GGCTAGCTACAACGA CGGGGAAG	10080
2932	CCCCGAUC A UAGUUGG	1358	CCAAGTGA GGCTAGCTACAACGA GGTGGGG	10081
2941	UCAGUUGG A CCCUGCAU	1985	ATGAGGGG GGCTAGCTACAACGA CCAACTGA	10082
2948	GACCCUGC A UUCAAGC	1363	GCTTTGAA GGCTAGCTACAACGA GCAGGGTC	10083
2959	CAAAGCCA A CUCAGUAA	1986	TTACTGAG GGCTAGCTACAACGA TGGCTTTG	10084
2968	CUCAGUAA A UCCAGAUU	1987	AATCTGGA GGCTAGCTACAACGA TTACTGAG	10085
2974	AAAUCCAG A UUGGGACC	1988	GGTCCCAA GGCTAGCTACAACGA CTGGATTT	10086
2980	AGAUUGGG A CCUCAACC	1989	GGTTGAGG GGCTAGCTACAACGA CCCAATCT	10087
2986	GGACCUCA A CCGGCACA	1990	TGTGCGGG GGCTAGCTACAACGA TGAGGTCC	10088
2998	GCACAAGG A CAACUGGC	1991	GCCAGTTG GGCTAGCTACAACGA CCTTGTC	10089
3001	CAAGGACA A CUGGCCGG	1992	CCGGCCAG GGCTAGCTACAACGA TGTCTTTG	10090
3010	CUGGCCGG A CGCCAACA	1993	TGTTGGCG GGCTAGCTACAACGA CCGGCCAG	10091
3016	GGACGCCA A CAAGGUGG	1994	CCACCTTG GGCTAGCTACAACGA TGGCGTCC	10092
3035	GUGGGAGC A UUCGGGCC	1384	GGCCCGAA GGCTAGCTACAACGA GCTCCCAC	10093
3051	CAGGGUUC A CCCCUCCC	1387	GGGAGGGG GGCTAGCTACAACGA GAACCTTG	10094
3061	CCCUCCCC A UGGGGGAC	1395	GTCCCCCA GGCTAGCTACAACGA GGGGAGGG	10095
3068	CAUGGGGG A CUGUUGGG	1995	CCCAACAG GGCTAGCTACAACGA CCCCCATG	10096
3088	GAGCCUCU A CGCUCAGG	1400	CCTGAGCG GGCTAGCTACAACGA GAGGGCTC	10097
3101	CAGGGCCU A CUCACAAC	683	GTTGTGAG GGCTAGCTACAACGA AGGCCCTG	10098
3105	GCCUACUC A CAACUGUG	1406	CACAGTTG GGCTAGCTACAACGA GAGTAGGC	10099
3108	UACUCACA A CUGUGCCA	1996	TGGCACAG GGCTAGCTACAACGA TGTGAGTA	10100
3138	CUGCCUCC A CCAUUCGG	1422	CCGATTGG GGCTAGCTACAACGA GGAGGCAG	10101
3142	CUCCACCA A UCGGCAGU	1997	ACTGCCGA GGCTAGCTACAACGA TGGTGGAG	10102
3165	GGCAGCCU A UCCCCUUA	691	TAAGGGAG GGCTAGCTACAACGA AGGCTGCC	10103
3173	ACUCCCUU A UCUCACC	694	GGTGGAGA GGCTAGCTACAACGA AAGGGAGT	10104
3179	UUAUCUCC A CCUCUAAG	1436	CTTAGAGG GGCTAGCTACAACGA GGAGATAA	10105

3190	UCUAAGGG A CACUCAUC	1998	GATGAGTG GGCTAGCTACAACGA CCCTTAGA	10106
3192	UAAGGGAC A CUCAUCCU	1440	AGGATGAG GGCTAGCTACAACGA GTCCCTTA	10107
3196	GGACACUC A UCCUCAGG	1442	CCTGAGGA GGCTAGCTACAACGA GAGTGTCC	10108
3207	CUCAGGCC A UGCAGUGG	1447	CCACTGCA GGCTAGCTACAACGA GGCCTGAG	10109

Input Sequence = AF100308. Cut Site = YG/M or UG/U.

Stem Length = 8 . Core Sequence = GGCTAGCTACAACGA

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

TABLE X: HUMAN HBV AMBERZYME AND SUBSTRATE SEQUENCE

Pos	Substrate	Seq ID	Amberzyme	Seq ID
61	ACUUUCU G CUGGUGG	1448	GCCACCAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGAAGU	10110
87	GGAACAGU G AGCCUUG	1449	GCAGGCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACUGUCC	10111
94	UGAGCCU G CUCAGAU	1450	AUUCGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGGCUCA	10112
112	CUGUCUCU G CCAUAUCG	1451	CGAUAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGAGACAG	10113
132	AUCUAUC G AAGACUGG	1452	CCAGUCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAUAAGAU	10114
153	CCUGUACC G AACAUUGA	1453	UCCAUGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGUACAGG	10115
169	AGAACAU G CAUCAGGA	1454	UCCUGAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAUGUUCU	10116
192	GGACCCU G CUCGUGU	1455	AACACGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGGUCC	10117
222	UUCUGU G ACAAUAU	1456	AUUUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AACAGAA	10118
315	CAAAUUC G CAGUCCCA	1457	UGGACUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAUUUUUG	10119
374	UGGUUUC G CUGGAUGU	1458	ACAUCAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAUAACCA	10120
387	AUGUGUCU G CGCGUUU	1459	AAACCGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGACACAU	10121
410	CUCCUCU G CAUCCUGC	1460	GCAGAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGAGGAAG	10122
417	UGCAUCCU G CUGCUAUG	1461	CAUAGCAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGAUGCA	10123
420	AUCCUGCU G CUAUGCCU	1462	AGGCAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGCAGGAU	10124
425	GCUGCUAU G CCUCAUCU	1463	AGAUGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUAGCAGC	10125
468	GGUAUGU G CCGUUUG	1464	CAACCGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AACAUACC	10126
518	CGGACCAU G CAAAACCU	1465	AGGUUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUGGUCCG	10127
527	CAAAACCU G CACAACUC	1466	GAGUUGUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGUUUUG	10128
538	CAACUCCU G CUCAAGGA	1467	UCCUUGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGAGUUG	10129
569	CUCAUGU G CUGUACAA	1468	UUGUACAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AACAUAGG	10130
596	CGGAAACU G CACCUGUA	1469	UACAGGUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGUUUCCG	10131
631	GGGCUUUC G CAAAUUAC	1470	GUUUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAAAGGCC	10132
687	UUACUAGU G CCAUUUGU	1471	ACAAUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACUAGUAA	10133
747	AUAUGGAU G AUGUGGUU	1472	AACCAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUCCAUAU	10134
783	AACAUUU G AGUCCCUU	1473	AGGACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAGAUGUU	10135
795	CCUUUAU G CCGCUGUU	1474	AACACGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUAAGGG	10136
798	UUUAUGCC G CUGUUAAC	1475	GGUACAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGCAUAAA	10137
911	GGCACAUU G CCACAGGA	1476	UCCUGUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUGGCC	10138
978	GGCCUAUU G AUUGGAA	1477	UUUCCAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUAGGCC	10139
997	AUGUCAAC G AAUUGUGG	1478	CCACAAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUUGACAU	10140
1020	UGGGGUU G CCGCCCUU	1479	AGGGCGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAACCCCA	10141
1023	GGUUUGCC G CCCUUUC	1480	GAAAGGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGCAAAAC	10142

1034	CCUUCAC G CAAUGUG	1481	CCACAUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GUGAAAGG	10143
1050	GAUAUCU G CUUUAUG	1482	CAUUAAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGAAUAUC	10144
1058	GCUUAAU G CCUUUAU	1483	UAUAAAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AUUAAAGC	10145
1068	CUUUAUAU G CAUGCAUA	1484	UAUGCAUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AUUAAAG	10146
1072	AUAUGCAU G CAUACAAG	1485	CUUGUAUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AUGCAUAU	10147
1103	ACUUUCU G CCAACUUA	1486	UAAGUUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GAGAAAGU	10148
1139	CAGUAUGU G AACCUUUA	1487	UAAAGGU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG ACAUACUG	10149
1155	ACCCCGU G CUCGGCAA	1488	UUGCCGAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AACGGGUU	10150
1177	UGGUCUAU G CCAAGUGU	1489	ACAUUGG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AUAGACCA	10151
1188	AAGUGUUU G CUGACGCA	1490	UGCUCAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AAACACTU	10152
1191	UGUUGCU G ACGCAACC	1491	GGUUGCU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGCAACA	10153
1194	UUGCUGAC G CAACCCCC	1492	GGGGUUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GUCAGCAA	10154
1234	CAUCAGC G CAUGCGUG	1493	CACGCAUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GCUGAUGG	10155
1238	CAGCGAU G CGUGGAAC	1494	GUUCCAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AUGCGCUG	10156
1262	UCUCCUCU G CCGAUCCA	1495	UGGAUCG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGAGGAGA	10157
1265	CCUCUGCC G AUCCAUC	1496	GUUGGAU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGCAGAGG	10158
1275	UCCAUACC G CGGAACUC	1497	GAGUCCG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGUUAUGA	10159
1290	UCCUAGCC G CUUGUUUU	1498	AAACAAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGCUAAGGA	10160
1299	CUUGUUUU G CUCGCAGC	1499	GCUCGAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AAAACAAG	10161
1303	UUUUGCUC G CAGCAGGU	1500	ACUUCUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GAGCAAAA	10162
1335	UCGGGACU G ACAUUCU	1501	AGAUUGU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGUCCCGA	10163
1349	UCUGUCGU G CUUCCCG	1502	CGGAGAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG ACGACAGA	10164
1357	GCUCUCCC G CAAAUUA	1503	UAUAUUU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGGAGAGC	10165
1382	CAUGGCUU G CUAGGCUG	1504	CAGCCUAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGCCAUGG	10166
1392	UAGGCUGU G CUGCCAAC	1505	GUUGGCAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG ACAGCCUA	10167
1395	GUUGUGCU G CCAACUGG	1506	CCAGUUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGCACAGC	10168
1411	GAUCCUAC G CGGGACGU	1507	ACGUCCCG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GUAGGAUC	10169
1442	CCGUCGGC G CUGAAUCC	1508	GGAUUCAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GCGACGGG	10170
1445	UCGGCGCU G AAUCCCGC	1509	GCGGGAU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG AGCGCCGA	10171
1452	UGAAUCCC G CGGACGAC	1510	GUUCUCC GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGAUUAUA	10172
1458	CCGCGGAC G ACCCCUCC	1511	GGAGGGU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GUCCGCGG	10173
1474	CCGGGGCC G CUUGGGGC	1512	GCCCAAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGCCTCCG	10174
1489	GCUCUACC G CCGCUUUC	1513	GAAGCGG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGUAGAGC	10175
1493	VACCGGCC G CUUCUCGG	1514	CGGAGAAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGGCGGUA	10176
1501	GUUCUCCC G CCUAUUGU	1515	ACAAUAG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGAGAGC	10177
1513	AUGUACC G ACCGUCCA	1516	UGGACGU GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GGUACAAU	10178
1528	CACGGGC G CACCUCUC	1517	GAGAGUG GGAGAAACUCC CU UCAAGGACAUCGUCCGGG GCCCCGUG	10179

1542	CUCUUUAC G CGGACUCC	1518	GGAGUCCG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUAAGAG	10180
1559	CCGUCUGU G CCUUCUCA	1519	UGAGAAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG ACAGACGG	10181
1571	UCUCAUCU G CCGACCG	1520	CGGUCCGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGAUGAGA	10182
1583	GACCGUGU G CACUUCGC	1521	GCGAAGUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG ACACGGUC	10183
1590	UGCACUUC G CUUCACCU	1522	AGUGAAG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAAGUGCA	10184
1601	UCACCUUC G CACGUCG	1523	GCGACGUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGAGUGA	10185
1608	UGCACGUC G CAUGGAGA	1524	UCUCCAUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GACGUGCA	10186
1624	ACCACCGU G AACGCCA	1525	UGGCGGUU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG ACGGUGGU	10187
1628	CCGUGAAC G CCCACAG	1526	CCUGUGGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUUCACGG	10188
1642	AGGAACCU G CCCAAGU	1527	ACUUGGGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGGUUCCU	10189
1654	AAGGUUUU G CAUAAGAG	1528	CUCUUAUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AAGACUU	10190
1690	AUGUCAAC G ACCGACCU	1529	AGGUCCGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUUGACAU	10191
1694	CAACGACC G ACCUUGAG	1530	CUCAAGGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUUCGUUG	10192
1700	CCGACCUU G AGGCAUAC	1531	GUUGCCU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AAGUCCG	10193
1730	UGUUUAU G AGUGGGAG	1532	CUCCACU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AUUAACA	10194
1818	AGCACCAU G CAACUUU	1533	AAAAGUUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AUGUGCU	10195
1835	UCACCUU G CCUAUCA	1534	UGAUUAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGAGUGA	10196
1883	CAAGCUGU G CCUUGGU	1535	ACCCAAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG ACAGCUUG	10197
1912	UGGACAUU G ACCCGUAU	1536	AUACGGGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AAUGUCCA	10198
1959	UCUUUUU G CCUUCUGA	1537	UCAGAAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AAAAAAGA	10199
1966	UGCCUUU G ACUUCUUU	1538	AAAGAAGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGAAGCA	10200
1985	UUCUAUUC G AGAUCUCC	1539	GGGAUCU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAAUAGAA	10201
1996	AUCUCCUC G ACACCGCC	1540	GGCGUGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAGGAGAU	10202
2002	UCGACACC G CCUCUGCU	1541	AGCAGAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GGUGUGCA	10203
2008	CCGCCUCU G CUCUGUAU	1542	AUACAGAG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGAGCGG	10204
2092	GUUGGGGU G AGUUGAUG	1543	CAUCAACU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG ACCCAAC	10205
2097	GGUGAGUU G AUGAAUCU	1544	AGAUUCAU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AACUCACC	10206
2100	GAGUUGAU G AAUCUAGC	1545	GUAGAUAU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AUCACUC	10207
2237	UUUUGGC G AGAAACUG	1546	CAGUUUCU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GCCCAAAA	10208
2251	CUGUUCUU G AAUAUUUG	1547	CAAAUAU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AAGAACAG	10209
2282	GUGGAUUC G CACUCCUC	1548	GAGGAGU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAAUCCAC	10210
2293	CUCUCCU G CAUAUAGA	1549	UCUAUAUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AGGAGGAG	10211
2311	CACCAAU G CCCUAUC	1550	GAUAGGGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG AUUUGGUG	10212
2354	UGUAAGAC G AAGAGGCA	1551	UGCCUUU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUCUAACA	10213
2388	ACUCCUUC G CCUCGCAG	1552	CUCGAGG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAGGAGU	10214
2393	CUCGCCUC G CAGACGAA	1553	UUCGUCUG GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GAGCGAG	10215
2399	UCGCAGAC G AAGGUCUC	1554	GAGACCUU GGAGAAAACUCC CU UCAAGGACAUCGUCGCCGG GUCUGCA	10216

2412	UCUAAUC G CCGGUCG	1555	CGACGGG GGAGAAACUCC CU UCAAGGACAUUCGCGG GAUUGAGA	10217
2415	CAUUGCC G CGUCGAG	1556	CUGCGAG GGAGAAACUCC CU UCAAGGACAUUCGCGG GCGAUUG	10218
2420	GCCGGUC G CAGAAGU	1557	AUCUUCG GGAGAAACUCC CU UCAAGGACAUUCGCGG GACGCGC	10219
2514	GGUACCU G CUUUAUC	1558	GAUUAAG GGAGAAACUCC CU UCAAGGACAUUCGCGG AAGGUACC	10220
2549	CUUJUCCU G ACAUUAU	1559	AUGAAUG GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGAAAG	10221
2560	AUUAUUU G CAGAGGA	1560	UCCUCCG GGAGAAACUCC CU UCAAGGACAUUCGCGG AAUUAUU	10222
2576	ACAUUUU G AUAGAUG	1561	ACAUUAU GGAGAAACUCC CU UCAAGGACAUUCGCGG AACAAUGU	10223
2615	CAGUAAU G AAACAGG	1562	CCUGUUU GGAGAAACUCC CU UCAAGGACAUUCGCGG AUUUAUCG	10224
2641	UUAACUAU G CCUGCUAG	1563	CUAGCAG GGAGAAACUCC CU UCAAGGACAUUCGCGG AUAGUUA	10225
2645	CUAUGCCU G CUAGGUU	1564	AAACUAG GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGCAUAG	10226
2677	AAAUUUU G CCCUAGA	1565	UCTAAGG GGAGAAACUCC CU UCAAGGACAUUCGCGG AAUUAUU	10227
2740	UCCAGAC G CGACAUUA	1566	UAUUGUG GGAGAAACUCC CU UCAAGGACAUUCGCGG GUCUGGA	10228
2742	CCAGACG G ACAUUAU	1567	AAUUAUG GGAGAAACUCC CU UCAAGGACAUUCGCGG GCGUCUG	10229
2804	CAGUAGC G CCUAUUU	1568	AAUAGAG GGAGAAACUCC CU UCAAGGACAUUCGCGG GCUACGUG	10230
2814	CUAUUUU G CGGUACAC	1569	GUGACCG GGAGAAACUCC CU UCAAGGACAUUCGCGG AAUAGAG	10231
2875	CAAACUC G AAAAGGA	1570	UGCCUUU GGAGAAACUCC CU UCAAGGACAUUCGCGG GAGGUUUG	10232
2928	UCUCCCC G AUCAUCAG	1571	CUGAUGU GGAGAAACUCC CU UCAAGGACAUUCGCGG GGGGAAGA	10233
2946	UGACCCU G CAUUAUA	1572	UUUGAUG GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGUUCCA	10234
2990	CUCAACC G CACAAGGA	1573	UCCUUGU GGAGAAACUCC CU UCAAGGACAUUCGCGG GGGUUGAG	10235
3012	GCCGGAC G CCAACAAG	1574	CUUUGUG GGAGAAACUCC CU UCAAGGACAUUCGCGG GUCGCGCC	10236
3090	GCCUCAC G CUCAGGC	1575	GCCUGAG GGAGAAACUCC CU UCAAGGACAUUCGCGG GUGAGGGC	10237
3113	ACAACUG G CCAGCAGC	1576	GCUCUGG GGAGAAACUCC CU UCAAGGACAUUCGCGG ACAGUUGU	10238
3132	CUCCUCU G CCUCCACC	1577	GGUGAGG GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGAGGAG	10239
51	AGGCCCC G UACUUUC	1578	GGAAAGU GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGCCCCU	10240
106	AGAAUACU G UCUCUGC	1579	GGCAGAG GGAGAAACUCC CU UCAAGGACAUUCGCGG AGUUAUCU	10241
148	GGACCCU G UACCGAAC	1580	GUUCGUA GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGCUCC	10242
198	CUGCUGU G UACAGGC	1581	GCCUGUA GGAGAAACUCC CU UCAAGGACAUUCGCGG ACAGCAG	10243
219	UUUUUUU G UUGACAAA	1582	UUUGUCA GGAGAAACUCC CU UCAAGGACAUUCGCGG AAGAAAA	10244
297	ACACCCU G UGUCUUGG	1583	CCAAGAC GGAGAAACUCC CU UCAAGGACAUUCGCGG ACGGGUGU	10245
299	ACCCGUGU G UCUGGCC	1584	GGCCAAG GGAGAAACUCC CU UCAAGGACAUUCGCGG ACACGGGU	10246
347	ACCAACU G UUGUCCUC	1585	GAGGACHA GGAGAAACUCC CU UCAAGGACAUUCGCGG AGGUUGU	10247
350	AACCGUU G UCCUCCAA	1586	UUGGAGA GGAGAAACUCC CU UCAAGGACAUUCGCGG AACAGGUU	10248
362	UCCAAUUU G UCCUGGU	1587	AACAGGA GGAGAAACUCC CU UCAAGGACAUUCGCGG AAUUGGA	10249
381	CGCUGAU G UGUCGCG	1588	CGCAGAC GGAGAAACUCC CU UCAAGGACAUUCGCGG AUCCAGC	10250
383	CUGGAUGU G UCUGCGC	1589	GCCGAGA GGAGAAACUCC CU UCAAGGACAUUCGCGG ACAUCCAG	10251
438	AUCUUCU G UUGGUUCU	1590	AGAACAA GGAGAAACUCC CU UCAAGGACAUUCGCGG AAGAAGAU	10252
465	CAAGUAU G UUGCCCGU	1591	ACGGCAA GGAGAAACUCC CU UCAAGGACAUUCGCGG AUACCUUG	10253

476	GCCCGUUU G UCCUCUAA	1592	UUAGAGGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAACGGGC	10254
555	ACCUCUAU G UUUCCUUC	1593	GAGGAAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUAGAGGU	10255
566	UCCUCUAU G UUGCUGUA	1594	UACAGCAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUGAGGGA	10256
572	AUGUUGCU G UACAAAAC	1595	GUUUUGUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGCAACAU	10257
602	CUGCACCU G UAUUCCCA	1596	UGGAAUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGGUGCAG	10258
694	UGCCAUUU G UUCAGUGG	1597	CCACUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAUUGCA	10259
724	CCCCCACU G UCUGGCUU	1598	AAGCCAGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGUGGGGG	10260
750	UGGAUGAU G UGGUUUUG	1599	CAAAACCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUCAUCCA	10261
771	CCAAGUCU G UACAACAU	1600	AUGUUGUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGACUUGG	10262
801	AUGCCGCU G UUACCAAU	1601	AUUGGUAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGCGGCAU	10263
818	UUUCUUUU G UCUUUGGG	1602	CCCAAAGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAAAGAAA	10264
888	UGGGAUUU G UAAUUGGG	1603	CCCAUUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAUUCCCA	10265
927	AACAUAUU G UACAAAAA	1604	UUUUUGUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAUADGUU	10266
944	AUCAAUAU G UGUUUUAG	1605	CUAAACA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUUUUGAU	10267
946	CAAAAUUG G UUUUAGGA	1606	UCCUAAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACAUUUG	10268
963	AACUUCU G UAAACAGG	1607	CCUGUUUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGGAAGUU	10269
991	GAAAGUAU G UCAACGAA	1608	UUCGUUGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUACUUUC	10270
1002	AAGGAUU G UGGGUCUU	1609	AAGACCCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAUUCGUU	10271
1039	CAGGCAU G UGGAUAUU	1610	AAUAUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUUGCUGU	10272
1137	AACAGUAU G UGAACCUU	1611	AAGGUUCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUACUGUU	10273
1184	UGCCAAGU G UUUUGUGA	1612	UCAGCAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACUUGGCA	10274
1251	GAACCUUU G UGUUCCUU	1613	AGGAGACA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAAGGUUC	10275
1253	ACUUUUGU G UCUCUUCU	1614	AGAGGAGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACAAGGUU	10276
1294	AGCCGCUU G UUUUGCUC	1615	GAGCAAAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAGCGGCU	10277
1344	ACAAUUCU G UCGUGCUC	1616	GAGCAGCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGAUUUGU	10278
1390	GUAAGGCU G UGCUGCCA	1617	UGGCAGCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGCCUAGC	10279
1425	CGUCCUUU G UUUACGUC	1618	GACGUAAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAAGGACG	10280
1508	CGCUUAUU G UACCGACC	1619	GGUCGGUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAUAGGCG	10281
1557	CCCCGUCU G UGCCUUUCU	1620	AGAAGGCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGACGGGG	10282
1581	CGGACCGU G UGCACUUC	1621	GAAGUGCA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACGGUCCG	10283
1684	UCAGCAAU G UCAACGAC	1622	GUCGUUGA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AUUGCUGA	10284
1719	CAAAAGCU G UGUUUUUA	1623	UAAACACA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGUCUUUG	10285
1721	AAGACUGU G UGUUUAAU	1624	AUUAACA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACAGUCUU	10286
1723	GACUGUGU G UUUAAUGA	1625	UCAUUAAA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACACAGUC	10287
1772	AGGUCUUU G UACUAGGA	1626	UCCUAGUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AAAGACCU	10288
1785	AGGAGGCU G UAGGCAUA	1627	UAUGCUUA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG AGCCUCCU	10289
1801	AAAUUGGU G UGUUCACC	1628	GGUGAACA GGAGGAAACUCC CU UCAAGGACAUCGUCCCGG ACCAAUUU	10290

1803	AUUGUGU G UUCACCAG	1629	CUGGUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG ACACCAU	10291
1850	CAUCUCAU G UUCAUGUC	1630	GACAUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUGAGAU	10292
1856	AUGUUAU G UCCUACUG	1631	CAGUAGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUGAACAU	10293
1864	GUCCUACU G UUCAAGCC	1632	GGCUAGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGUAGGAC	10294
1881	UCCRAAGU G UGCCUUGG	1633	CCAAGGCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGCUUGGA	10295
1939	GAGCUUCU G UGGAGUUA	1634	UAACUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGAAGCUC	10296
2013	UCUGUCU G UAUCGGGG	1635	CCCCGAUA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGAGCAGA	10297
2045	GGAAACAU G UUCACCUC	1636	GAGGUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AAUGUUC	10298
2082	GCUAUUCU G UGUUGGGG	1637	CCCCAACA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGAAUAGC	10299
2084	UAUUCUGU G UUGGGGUG	1638	CACCCCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG ACAGAAUA	10300
2167	UCAGCUAU G UCAACGUU	1639	AACGUUGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUAGCUGA	10301
2205	CAACUAU G UGUUUUCA	1640	UGAAACCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AAUAGUUG	10302
2222	CAUUUCCU G UCUUACUU	1641	AAGUAAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGGAAUUG	10303
2245	GAGAAACU G UUCUUGAA	1642	UUCAAGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGUUUCUC	10304
2262	UAUUUGGU G UCUUUUGG	1643	CCAAAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG ACCAAUA	10305
2274	UUUGGAGU G UGGAUUCG	1644	CGAAUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG ACUCCAAA	10306
2344	AAACUACU G UUGUUAGA	1645	UCUACAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGUAGUUU	10307
2347	CUACUGUU G UUGACGGA	1646	UCGUCUAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AACAGUAG	10308
2450	AUCUCAU G UUGUAUUU	1647	AAUACUAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUUGAGAU	10309
2573	AGGACAUU G UUGAUAGA	1648	UCUUAUAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AAUUGUCCU	10310
2583	UGAUAGAU G UAAGCAAU	1649	AUUGCUUA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUCUAUCA	10311
2594	AGCAAUUU G UGGGGCCC	1650	GGGCCCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AAUUGUCU	10312
2663	AUCCCAU G UUAUAAA	1651	UUUAGUAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUUGGGAU	10313
2717	CAGAUUU G UAGUUAU	1652	AUUAACUA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AUACUCUG	10314
2901	AUCUUUCU G UCCCCAAU	1653	AUUGGGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGAAAGAU	10315
3071	GGGGGACU G UUGGGGUG	1654	CACCCCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGUCCCCC	10316
3111	UCACAAU G UGCCAGCA	1655	UGCUGGCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG AGUUGUGA	10317
40	AUCCACAGA G UCAGGGCC	1656	GGCCCUGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG UCUGGGAU	10318
46	GAGUCAGG G CCCUGUAC	1657	GUACAGGG GGAGGAAACUCC CU UCAAGGACAUCGUCGGG CCUGACUC	10319
65	UCCUGCUG G UGGCUCCA	1658	UGGAGCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG CAGCAGGA	10320
68	UGCUGGUG G CUCCAGUU	1659	AACUGGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGGG CACCAGCA	10321
74	UGGCUCCA G UUCAGGAA	1660	UUCCUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG UGGAGCCA	10322
85	CAGGAACA G UGAGCCCU	1661	AGGGCUCA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG UGUUCCUG	10323
89	AACAGUGA G CCCUGCUC	1662	GAGCAGGG GGAGGAAACUCC CU UCAAGGACAUCGUCGGG UCACUGUU	10324
120	GCCAUAUC G UCAAUUUU	1663	AAGAUUGA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG GAUAUGGC	10325
196	CCUGCUC G UGUUACAG	1664	CUGUAACA GGAGGAAACUCC CU UCAAGGACAUCGUCGGG GAGCAGG	10326
205	UGUACAG G CGGGGUUU	1665	AAACCCGG GGAGGAAACUCC CU UCAAGGACAUCGUCGGG CUGUAACA	10327



210	CAGCGGG G UUUUCUU	1666	AAGAAAA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCCGCCUG	10328
248	ACCACAGA G UCAGACU	1667	AGUCUAGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UCUGUGGU	10329
258	CUAGACUC G UGGUGGAC	1668	GUCCACCA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GAGUCUAG	10330
261	GACUCUG G UGGACUUC	1669	GAAGUCCA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CACGAGUC	10331
295	GAACACC G UGUUCUJU	1670	AAGACACA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GGGUGUUC	10332
305	GUGUCUG G CCAAAUU	1671	AAUUUGG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CAAGACAC	10333
318	AAUUGGA G UCCCAAU	1672	AUUUGGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGCGAAUU	10334
332	AAUCUCCA G UCACUCAC	1673	GUGAGUGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGGAGAUU	10335
368	UUGUCCUG G UUAUGGU	1674	AGCGAUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CAGGACAA	10336
390	UGUCUGCG G CGUUUAU	1675	AUAAACG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CGCAGACA	10337
392	UCUGCGG G UUUUAUCA	1676	UGAUAUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GCGCAGA	10338
442	UCUGUGG G UUCUUCUG	1677	CAGAAGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CACAAGA	10339
461	CUAUAAG G UAUGUUG	1678	GCAACAUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CUUGAUAG	10340
472	UGUGGCC G UUDGUCCU	1679	AGGACAAA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GGGCAACA	10341
506	AAACACCA G CACCGGAC	1680	GUCGUGG GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGUUUGUU	10342
625	CAUCUUG G CUUUGCA	1681	UGCGAAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCAAGAUG	10343
648	CUAUGGA G UGGGCCUC	1682	GAGGCCA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UOCCAUAG	10344
652	GGAGUGG G CCUCAGUC	1683	GACUGAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCACUCCC	10345
658	GGGCCUCA G UCCGUUUC	1684	GAACGGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGAGGCC	10346
662	CUCAGUCC G UUUUCUU	1685	AAGAGAA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GGACUGAG	10347
672	UUCUCUG G CUCAGUUU	1686	AAACUAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CAAGAGAA	10348
677	UUGGCUCA G UUAUCUAG	1687	CUAGUAA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGAGCCAA	10349
685	GUUACUA G UGCCAUUU	1688	AAUUGCA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UAGUAAAC	10350
699	UUUGUUA G UGGUUCGU	1689	ACGAACA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGAACAAA	10351
702	GUUCAGUG G UUCGUAGG	1690	CCUACGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CACUGAAC	10352
706	AGUGGUUC G UAGGCUU	1691	AAGCCUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG GAACCACU	10353
711	UUCGUAG G CUUUCGCC	1692	GGGGAAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCUACGAA	10354
729	ACUGUCUG G CUUUCAGU	1693	ACUGAAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CAGACAGU	10355
736	GGCUUUA G UUAUUGG	1694	CCAUUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UGAAAGCC	10356
753	AUGAUGUG G UUUUGGG	1695	CCCCAAA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CACAUCAU	10357
762	UUUUGGG G CCAAGUCU	1696	AGACUUG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCCCAGAA	10358
767	GGGCCAA G UCUGUACA	1697	UGUACAGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UUGGCCCC	10359
785	CAUCUAGA G UCCUUUA	1698	UAAAGGA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UCAAGAUG	10360
826	GUCUUUG G UAUACAUU	1699	AAUGUA GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCAAAGAC	10361
898	AAUUGGA G UUGGGCA	1700	UGCCCCA GGAGAAACUCC CU UCAAGGACAUCGUCGGG UCCCAUUA	10362
904	GAGUUGG G CACAUGC	1701	GCAUUG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CCAACUC	10363
971	GUAAACAG G CCUAUUGA	1702	UCAUAG GGAGAAACUCC CU UCAAGGACAUCGUCGGG CUGUUUAC	10364

987	AUUGGAAA G UAUGUCAA	1703	UUGACAUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUUCCAAU	10365
1006	AUUGUGG G UCUUUUG	1704	CCAAAAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCACAAU	10366
1016	CUUUUGG G UUUGCGC	1705	GCGGAAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAAG	10367
1080	GCAUACAA G CAAAACAG	1706	CUGUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGUAUGC	10368
1089	CAAAACAG G CUUUUACU	1707	AGUAAAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGUUUG	10369
1116	CUUACAAG G CCUUUCUA	1708	UAGAAAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUGUAAG	10370
1126	CUUUCUAA G UAAACAGU	1709	ACUGUUUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUAGAAAG	10371
1133	AGUAAACA G UAUGUGAA	1710	UUCACAUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUUUACU	10372
1152	UUUACCCC G UUGUCUGG	1711	CCGAGCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGGUAAA	10373
1160	GUUGCUG G CAAAGGCC	1712	GGCCUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGAGCAAC	10374
1166	CGCAACG G CCUGGUCU	1713	AGACCAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGUUGCCG	10375
1171	ACGGCCUG G UCUAUGCC	1714	GGCAUAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGGCCAU	10376
1182	UAUGCCAA G UGUUUGCU	1715	AGCAAACA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGGCCAU	10377
1207	CCCCACUG G UUGGGGCU	1716	AGCCCCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGGCCAU	10378
1213	UGGUUGGG G CUUGGCCA	1717	UGGCCAAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACCA	10379
1218	GGGGCUUG G CCAUAGGC	1718	GCCUUGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACCA	10380
1225	GGCAUAG G CCAUCAGC	1719	GCUAUGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACCA	10381
1232	GGCAUCA G CGAUGCG	1720	CGCAUGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAUGGCC	10382
1240	GGCAUGC G UGGAACCU	1721	AGUUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GCAUGGCC	10383
1287	AACUCCUA G CCGUUGU	1722	ACAAGCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAGGAGUU	10384
1306	UGCUCGCA G CAGGUCUG	1723	CAGACUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGCAGCA	10385
1310	CGCAGCAG G UCUGGGGC	1724	GCCCCAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGCUGCG	10386
1317	GGUCUGGG G CAAAACUC	1725	GAGUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAGACC	10387
1347	AUUCUGUC G UGCUCUCC	1726	GGAGAGCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GACAGAAU	10388
1379	UUUCCAUG G CUGCUAGG	1727	CCUAGCAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUGGAAA	10389
1387	GCUGCUAG G CUGUGCUG	1728	CAGCACAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUAGCAGC	10390
1418	CGCGGGAC G UCCUUUGU	1729	ACAAAGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUCCCCGG	10391
1431	UUGUUUAC G UCCCGGCG	1730	CGACGGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUAAACAA	10392
1436	UACGUCCC G UCAGGCGU	1731	AGCGCCGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGCACGUA	10393
1440	UCCCGUGG G CGCUGAAU	1732	AUUCAGCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGACGGGA	10394
1471	CUCCCGGG G CCGCUUGG	1733	CCAAGCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGGGAG	10395
1481	CGCUUGGG G CUCUACCG	1734	CGUAGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAGCG	10396
1517	UACCGACC G UCCACGGG	1735	CCCGUGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGUCCGUA	10397
1526	UCCACGGG G CGCACCUC	1736	GAGGUGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGUGGA	10398
1553	GACUCCCC G UCUGUGCC	1737	GGCACAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGGGAGUC	10399
1579	GCCGACC G UGUGCACU	1738	AGUGCACA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGUCCGCG	10400
1605	CUCUGAC G UCGAUGG	1739	CCAUGCGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUGCAGAG	10401

1622	AGACCACC G UGAACGCC	1740	GGCGUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG GGUGGUCU	10402
1649	UGCCCAAG G UCUGCAU	1741	AUGCAAGA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUUGGCA	10403
1679	GACUUUA G CAUGUCA	1742	UGACAUUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UGAAAGUC	10404
1703	ACCUAG G CAUACUUC	1743	GAAGUAUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUCAAGGU	10405
1732	UUUAUGA G UGGAGGA	1744	UCCUCCCA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCAUUAUA	10406
1741	UGGAGGA G UUGGGGA	1745	UCCCCCAA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCCUCCCA	10407
1754	GGGAGGAG G UUAAGGUA	1746	UAACCUAA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUCCUCC	10408
1759	GAGGUAG G UUAAGGU	1747	ACCUUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUAACCU	10409
1766	GGUUAAG G UCUUUGUA	1748	UACAAAGA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUUUAACC	10410
1782	ACUAGGAG G CUGUAGGC	1749	GCCUACAG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUCCUAGU	10411
1789	GGCUGUAG G CAUAAAUU	1750	AAUUUAUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUACAGCC	10412
1799	AUAAAUUG G UGUGUUA	1751	UGAACACA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CAUUUAU	10413
1811	GUUCACCA G CACCAUGC	1752	GCAUGGUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UGGUGAAC	10414
1870	CUGUCAA G CCUCCAAG	1753	CUTGGAGG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UUGAACAG	10415
1878	GCCUCCAA G CUGUGCCU	1754	AGGCACAG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UUGGAGGC	10416
1890	UGCCUUGG G UGGCUUUG	1755	CAAAGCCA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCAAGGCA	10417
1893	CUUGGGUG G CUUUGGGG	1756	CCCCAAG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CACCCAAG	10418
1901	GCUUUGG G CAUGGACA	1757	UGUCCAUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCCAAGC	10419
1917	AUUGACCC G UAUAAAGA	1758	UCUUUAUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG GGGUCAU	10420
1933	AAUUUGGA G CUUCUGUG	1759	CACAGAAG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCCAAAUU	10421
1944	UCUGUGGA G UUAUCUCU	1760	GAGAGUAA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCCACAGA	10422
2023	AUCGGGGG G CCUUGAG	1761	CUCUAAGG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCCCCGAU	10423
2031	GCUUAGA G UCUCGGGA	1762	UCCGGAGA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCUAAGGC	10424
2062	ACCAUACG G CACUCAGG	1763	CCUGAGUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CGUAUGGU	10425
2070	GCACUCAG G CAAGCUAU	1764	AUAGCUUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CUGAGUGC	10426
2074	UCAGGCCA G CUUUUCUG	1765	CAGAAUAG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UUGCCUGA	10427
2090	GUGUUGGG G UGAGUUGA	1766	UCAACUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCCAACAC	10428
2094	UGGGGUGA G UUGAUGAA	1767	UUCAUCAA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UCACCCCA	10429
2107	UGAAUCUA G CCACUUGG	1768	CCAGGUGG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UAGAUAUA	10430
2116	CCACCUUG G UGGGAAGU	1769	ACUCCCAA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCAGGUGG	10431
2123	GGUGGGAA G UAAUUUGG	1770	CCAAAUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UUCCACC	10432
2140	AAGAUAUA G CAUCCAGG	1771	CCUGGAGG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UGGAUCUU	10433
2155	GGGAUUA G UAGUCAGC	1772	GCUGACUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UAAUUCUCC	10434
2158	AAUUAUA G UCAGCUAU	1773	AUAGCUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UACUAAU	10435
2162	AGUAGUA G CUAUGUCA	1774	UGACUAUG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG UGACUACU	10436
2173	AUGUCAAC G UUAUAUUG	1775	CAUAUUA GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG GUUGACAU	10437
2183	UAAUAUGG G CCUAAAAA	1776	UUUUAGG GGAGGAAACUCC CU UCAAGGACAUUCGUCCGGG CCAUAUUA	10438

2208	CUAUUGUG G UUCACAU	1777	AUGUGAAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CACAUAAG	10439
2235	ACUUUUUG G CGAGAAAC	1778	GUUUCUCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAAGU	10440
2260	AAUAUUG G UGUUUUU	1779	AAAAGACA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAUAUU	10441
2272	CUUUUGGA G UGUGGAU	1780	AAUCCACA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCAAAAG	10442
2360	ACGAAGAG G CAGGUCCC	1781	GGGACUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUCUUCGU	10443
2364	AGAGGCAG G UCCCUUAG	1782	CUAGGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGCCUCU	10444
2403	AGACGAAG G UCUCAUUC	1783	GAUTGAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUCGUCU	10445
2417	AUCGCCGC G UCGCAGAA	1784	UUCUGCGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GCGGCGAU	10446
2454	CAUUGUA G UAUUCUU	1785	AAGGAUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAACAUG	10447
2474	CACUAAG G UGGGAAC	1786	GUUCCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUAUGUG	10448
2491	UUUACGGG G CUUUAUUC	1787	GAUUAAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGUAAA	10449
2507	CUUCUACG G UACCUUGC	1788	GCAAGUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGUAGAAG	10450
2530	CCUAAUG G CAAACUCC	1789	GGAGUUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUUUAGG	10451
2587	AGAUGUA G CAUUUGU	1790	ACAAUUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUAACUUC	10452
2599	UUUGUGGG G CCCCUUAC	1791	GUUAGGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGACAAA	10453
2609	CCUUUACA G UAAUGAA	1792	UUCAUUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUUAGGG	10454
2650	CCUGCUAG G UUUUAUCC	1793	GGUAAAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUAGCAGG	10455
2701	AUCAAAAC G UAUUAUCC	1794	GGUUAUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGUUUGAU	10456
2713	UAUCCAGA G UAUUGAU	1795	ACUACUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCUGGAUA	10457
2720	AGUAUGUA G UUAUAUUA	1796	AUGAUUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UACUAUCU	10458
2768	UUUGGAAG G CGGGGAUC	1797	GAUCCCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUCCAAA	10459
2791	AAAGAGA G UCCACACG	1798	CGUGUGGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCUCUUUU	10460
2799	GUCCACAC G UAGGCGCU	1799	AGGCGUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUGUGGAC	10461
2802	CACACGUA G CGCCUCAU	1800	AUGAGCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UACGUGUG	10462
2818	UUUUGCGG G UCACCAUA	1801	UAUGGUGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGCAAAA	10463
2848	GAUCUACA G CAUGGGAG	1802	CUCCCAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUAGAUC	10464
2857	CAUGGGAG G UUGGUCUU	1803	AAGACCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUCCCAUG	10465
2861	GGAGGUUG G UCUUCCAA	1804	UUUGAGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAACCUCC	10466
2881	UCGAAAAG G CAUGGGGA	1805	UCCCAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUUCGA	10467
2936	GAUCAUA G UUGGACCC	1806	GGUCCAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAUGAUC	10468
2955	CAUUCAAA G CCAACUCA	1807	UGAUUGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGAAUG	10469
2964	CCAACUCA G UAAAUCCA	1808	UGAUUUA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAGUUGG	10470
3005	GACAACTUG G CCGGACGC	1809	GGUCCCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAGUUGUC	10471
3021	CCAACAAG G UGGGAGUG	1810	CACUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUGUUGG	10472
3027	AGGUGGGA G UGGGAGCA	1811	UGCUCCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCACCU	10473
3033	GAGUGGGA G CAUUCGGG	1812	CCGAAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCACUC	10474
3041	GCAUUCGG G CCAGGUUU	1813	AACCCUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGAUGC	10475

3047	GGGCAGG G UUCACCCC	1814	GGGGUGAA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCUGGCC	10476
3077	CUGUUGG G UGGAGCCC	1815	GGGCUCA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACAG	10477
3082	GGGUGGA G CCUCACG	1816	CGUGAGG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCACCCC	10478
3097	CGUCAGG G CCUACUA	1817	UGAGUAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCUGAGG	10479
3117	CUGUGCCA G CAGUCCU	1818	AGGAGUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGGCACAG	10480
3120	UGCCAGCA G CUCCUCCU	1819	AGGAGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGCUGGCA	10481
3146	ACCAUUG G CAGUCAGG	1820	CCUGACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGAUUGU	10482
3149	AUCCGCA G UCAGGAAG	1821	CUUCCUGA GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGCCGAU	10483
3158	UCAGGAAG G CAGCCUAC	1822	GUAGGUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUUCCUGA	10484
3161	GGAAGCA G CCUACUCC	1823	GGAGUAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGCCUUC	10485
3204	AUCCUCAG G CCAUGCAG	1824	CUGCAUG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGAGGAU	10486
31	CUCUCAA G AUCCAGA	1999	UCUGGGAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGAAGAG	10487
38	AGAUCCA G AGUCAGG	2000	CCUGACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGGGAUCU	10488
44	CAGAGUA G GGCCUGU	2001	ACAGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGACUCUG	10489
45	AGAGUCAG G GCCUUGA	2002	UACAGGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGACUCU	10490
64	UUCUCGU G GUGGUCC	2003	GGAGCCAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGCAGGAA	10491
67	CUGCUGU G GCUCAGU	2004	ACUGGAG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACCAGCAG	10492
79	CCAGUUA G GAACAGU	2005	CACUGUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAACUGG	10493
80	CAGUUCAG G AACAGUGA	2006	UCACUGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGAACUG	10494
99	CCUGCUA G AAUACUGU	2007	ACAGUAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAGCAGG	10495
135	UAUUGAA G ACUGGGGA	2008	UCCCCAGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUGGAUAA	10496
139	CGAAGACU G GGGACCCU	2009	AGGGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGUCUUCG	10497
140	GAAGACUG G GGACCCUG	2010	CAGGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAGUCUUC	10498
141	AAGACUGG G GACCCUGU	2011	ACAGGUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAGUCUU	10499
142	AGACUGG G ACCCUGA	2012	UACAGGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAGUCU	10500
159	CCGAACAU G GAGAACU	2013	AUGUUCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUGUUCGG	10501
160	CGAACUG G AGAACAU	2014	GAUGUUCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUGUUCG	10502
162	AACAUGGA G AACUCCG	2015	GCGAUGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCAUGU	10503
175	UCGCAUCA G GACUCCUA	2016	UAGGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAUGCGA	10504
176	CGCAUCAG G ACUCCUAG	2017	CUAGGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGAUGCG	10505
184	GACUCCUA G GACCCUG	2018	CAGGGUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAGGAGUC	10506
185	ACUCCUAG G ACCCUGC	2019	GCAGGGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUAGGAGU	10507
204	GUGUACA G GCGGGGU	2020	AACCCCG GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUAAAC	10508
207	UUACAGG G GGGUUUU	2021	AAAAACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GCUGUAA	10509
208	UACAGGC G GGUUUUC	2022	GA AAAAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGCCUGA	10510
209	ACAGCGG G GUUUUCU	2023	AGAAAAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGCCUGU	10511
246	AUACCACA G AGUCUAGA	2024	UCUAGACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUGGUU	10512

253	AGAGUCUA G ACUGUGG	2025	CCACGAGU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG UAGACUCU	10513
260	AGACUCGU G GUGGACUU	2026	AAGUCCAC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG ACAGAGUCU	10514
263	CUCGUGGU G GACUUCUC	2027	GAGAGUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG ACCACGAG	10515
264	UCGUGGUG G ACUUCUCU	2028	AGAGAAGU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CACCACGA	10516
283	AUUUUCUA G GGGGAACA	2029	UGUUCUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG UAGAAAAU	10517
284	UUUUCUAG G GGAACAC	2030	GUGUUCUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CUAGAAAA	10518
285	UUUCUAGG G GGAACACC	2031	GGUGUUCUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CCUAGAAA	10519
286	UUUCUAGG G GAACACCC	2032	GGUGUUCUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CCUAGAAA	10520
287	UCUAGGGG G AACACCCG	2033	CGGGUGUU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CCCCUGA	10521
304	UGUGUCUU G GCCAAAUA	2034	AUUUUGGC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AAGACACA	10522
367	UUUGUCUU G GUUAUCGC	2035	GCGAUUAC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AGGACAAA	10523
377	UUUUCGCU G GAUGUGUC	2036	GACACAUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AGCGAUAA	10524
378	UAUCGCU G AUGUGUCU	2037	AGACACAU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CAGCGAUA	10525
389	GUGUCUGC G GCGUUUUA	2038	UAAAACGC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG GCAGACAC	10526
441	UUUCUGUU G GUUCUUCU	2039	AGAAGAAC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AACAAGAA	10527
450	GUUCUUCU G GACUAUCA	2040	UGAUAGUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AGAAGAAC	10528
451	UUCUUCUG G ACUAUCNA	2041	UUGAUAGU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CAGAAGAA	10529
460	ACUAUCNA G GUUAUGUG	2042	CAACAUAU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG UUGAUAGU	10530
490	UAUUUCCA G GAUCAUCA	2043	UGAUGAUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG UGGAUAUA	10531
491	AAUUCCAG G AUCAUCA	2044	UUGAUAU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CUGGAUUA	10532
511	CCAGCACC G GACCAUGC	2045	GCAUGGUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG GUGUCUGG	10533
512	CAGCACC G ACCAUGCA	2046	UGCAUGGU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CGUGUCUG	10534
544	CUGCUCAA G GAACUCU	2047	AGAGGUUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG UUGAGCAG	10535
545	UGCUCAAG G AACUCUA	2048	UAGAGGUU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CUUGAGCA	10536
585	AAACUAC G GACGAAA	2049	UUUCGUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG GUAGGUUU	10537
586	AACUACG G ACGGAAAC	2050	GUUUCGUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CGUAGGUU	10538
589	CUACGGAC G GAACUGC	2051	GCAGUUUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG GUCCGUAG	10539
590	UACGGACG G AAACUGCA	2052	UGCAGUUU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CGUCCGUA	10540
623	AUCAUCUU G GGUUUUCG	2053	CGAAAGCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AAGAUAU	10541
624	UCAUCUUG G GCUUUCGC	2054	GCGAAAGC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CAGAUGA	10542
644	AUACCUAU G GGAGUGGG	2055	CCCAUCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AUAGGUUU	10543
645	UACCUAUG G GAGUGGGC	2056	GCCACUC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CAUAGGUA	10544
646	ACCUAUG G AGUGGGCC	2057	GGCCACU GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CCAUAGGU	10545
650	AUGGGAGU G GGCUCAG	2058	CUGAGGCC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG ACUCCCAU	10546
651	UGGGAGUG G GCUUCAGU	2059	ACUGAGGC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG CACUCCCA	10547
671	UUUCUCUU G GCUCAGUU	2060	AACUGAGC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG AAGAGAAA	10548
701	UGUUCAGU G GUUCGUAG	2061	CUACGAAC GGAGGAAAUCC CU UCAAGGACAUCGUCCGGG ACUGAACA	10549

709	GGUUCGUA G GGUUUUCC	2062	GGAAAGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UACGAACC	10550
710	GUUCGUAG G GCUUUCCC	2063	GGGAAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUACGAAC	10551
728	CACUGUCU G GCUUUCAG	2064	CUGAAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGACAGUG	10552
743	AGUUAUUAU G GAUGAUGU	2065	ACAUCauc GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUUAUAACU	10553
744	GUUAUAUG G AUGAUGUG	2066	CACAUCAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUAUAAC	10554
752	GAUGAUGU G GUUUUGGG	2067	CCCAAAAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACAUCAUC	10555
758	GUGGUUUU G GGGGCCAA	2068	UUGGCCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAAACCAC	10556
759	UGGUUUUG G GGGCCAAG	2069	CUUGGCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAAACCA	10557
760	GGUUUUGG G GGCCNAGU	2070	ACUUGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAAACC	10558
761	GUUUUGGG G GCCAAGUC	2071	GACUUGGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAAAAC	10559
824	UUGUCUUU G GGUUAACA	2072	UGUAUACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAAGACAA	10560
825	UGUCUUUG G GUUAUACU	2073	AUGUAUAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAAGACA	10561
856	AACAAAAA G AUGGGGAU	2074	AUCCCCAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUUUUGUU	10562
859	AAAAAGAU G GGGUAUUA	2075	AAUAUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUCUUUUU	10563
860	AAAAAGUG G GGAUAUUC	2076	GAUAUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUCUUUU	10564
861	AAAGAUGG G GAUAUUCU	2077	GGAAUAUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAUCUUU	10565
862	AAGAUGGG G AUAUUCUCC	2078	GGGAUAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAUCUUU	10566
881	AACUUAU G GGAUAUGU	2079	ACAUAUCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUGAAGUU	10567
882	ACUUAUG G GAUAUGUA	2080	UACAUAUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUGAAGU	10568
883	CUUCAUGG G AUAUGVAA	2081	UUACAUAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAUGAAG	10569
894	AUGUAUUAU G GAGUUGGG	2082	CCAAUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUUACAU	10570
895	UGUAUAUG G GAGUUGGG	2083	CCCAACUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAUAUAC	10571
896	GUAAUUGG G AGUUGGGG	2084	CCCCAAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAUUAC	10572
901	UGGGAGUU G GGGCACAU	2085	AUGUGCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AACUCCCA	10573
902	GGGAGUUG G GGCACAUT	2086	AAUGUGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAACUCCC	10574
903	GGAGUUGG G GCACAUTU	2087	CAAUGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACUCC	10575
917	UUGCCACA G GAACAUAU	2088	AUAUGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUGGCCA	10576
918	UGCCACAG G AACAUUAU	2089	AAUAUGUU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUGUGGCA	10577
952	GUGUUUUA G GAAAUUUC	2090	GAAGUUUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAAAACAC	10578
953	UGUUUUG G AAACUUCU	2091	GGAAUJU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUAAAACA	10579
970	UGUAAACA G GCCUAUUG	2092	CAUAAGGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGUUUAACA	10580
982	UAUUGAUU G GAAAGUAU	2093	AUAUUAUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUCAUAU	10581
983	AUUGAUUG G AAAGUAUG	2094	CAUACUUU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAUCAAU	10582
1004	CGAAUUGU G GGUCUUUU	2095	AAAAGACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACAAUUCG	10583
1005	GAAUUGUG G GUCUUUUG	2096	CAAAAGAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CACAUAUC	10584
1013	GGUCUUUU G GGGUUUGC	2097	GCAAACCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAAAGACC	10585
1014	GUCUUUUG G GGUUUGCC	2098	GGCAAAAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAAGAC	10586



1015	UCUUUUGG G GUUUGCCG	2099	CGGCAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAAAGA	10587
1041	CGCAUUG G GAUAUUCU	2100	AGAAUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACAUUGG	10588
1042	GCAUUG G AUUUCUG	2101	CAGAAUUAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CACAUUG	10589
1088	GCAAAACA G GCUUUUAC	2102	GUAAAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGUUUUG	10590
1115	ACUUAACA G GCCUUUCU	2103	AGAAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUGUAAGU	10591
1159	CGUUGUC G GCAACGGC	2104	GCCGUUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GAGCAACG	10592
1165	UCGGCAAC G GCCUGGUC	2105	GACCAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GUUGCCGA	10593
1170	AACGGCCU G GUCUAUGC	2106	GCAUAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AGGCCGUU	10594
1206	CCCCCACU G GUUGGGG	2107	GCCCCAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AGUGGGG	10595
1210	CACUGGUU G GGGCUUG	2108	CCAAGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AACCAAGU	10596
1211	ACUGGUU G GGUUGG	2109	GCCAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAACCAGU	10597
1212	CUGGUUG G GCUUGGC	2110	GGCCAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAACCAG	10598
1217	UGGGGCUU G GCCAUAGG	2111	CCUAUAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AAGCCCCA	10599
1224	UGGCCAUA G GCCAUAGG	2112	CUGAUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UAUGGCCA	10600
1242	GCAUGCGU G GAACCUUU	2113	AAAGGUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACGCAUG	10601
1243	CAUGCGUG G AACCUUU	2114	CAAAAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CACGAUG	10602
1277	CAUACCG G GAACUCCU	2115	AGGAGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGGUUAG	10603
1278	AUACCGG G AACUCCU	2116	UAGGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGGUUAG	10604
1309	UCGACGCA G GUCUGGG	2117	CCCCAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGCUUGCGA	10605
1314	GCAGGUCU G GGGCAAAA	2118	UUUUGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AGACUUG	10606
1315	CAGGUCUG G GGCACAA	2119	GUUUUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAGACUUG	10607
1316	AGGUCUGG G GCAAAACU	2120	AGUUUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAGACUUG	10608
1329	AACUCAUC G GACUGAC	2121	GUACUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GAUGAGU	10609
1330	ACUCAUC G GACUGAC	2122	UGUCAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAGAGU	10610
1331	CUCAUCG G ACUGACAA	2123	UUUCAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAGAGU	10611
1378	AUUUCCAU G GCUGUAG	2124	CUAGCAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AUGGAAU	10612
1386	GGCUGUA G GCUGUAG	2125	AGCACAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UAGCAGC	10613
1402	UGCCAAU G GAUCCUAC	2126	GUAGGAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AGUUGGCA	10614
1403	GCCAAU G AUCCUAC	2127	CGUAGGAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAGUUGC	10615
1413	UCCUACG G GACGUCC	2128	GGACGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGUAGGA	10616
1414	CCUACGG G GACGUCC	2129	AGGACGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGUAGG	10617
1415	CUACGGG G ACUGUCCU	2130	AAGGACGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCGCGUAG	10618
1439	GUCCGUC G GCGUGAA	2131	UUCAGCGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GACGGGAC	10619
1454	AUCCGCG G GACGACC	2132	GGGUCGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGGGU	10620
1455	AUCCGCG G ACAGCCC	2133	GGGUCGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GCGGGU	10621
1468	CCCCUCC G GGGCGCU	2134	AGCGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GGGAGGGG	10622
1469	CCCCUCC G GGGCGCU	2135	AAGCGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GGGAGGGG	10623



1470	CCUCCCG G GCGCUUG	2136	CAAGGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCGGAGG	10624
1478	GGCCGUU G GGGUCUA	2137	UAGAGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG AAGCGCC	10625
1479	GCCGUUG G GGCUCUAC	2138	GUAGAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CAAGCGC	10626
1480	CCGUUGG G GCUUACC	2139	GGUAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCAAGCG	10627
1523	CCGUCCAC G GGGCGAC	2140	GUGCGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG GUGGACG	10628
1524	CGUCCAG G GGGCAC	2141	GGUGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CGUGACG	10629
1525	GUCCACG G GGCACCU	2142	AGUGCGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCGUGAC	10630
1544	CUUACGC G GACUCCC	2143	GGGAGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG GCGUAAAG	10631
1545	UUACGGC G ACUCCCG	2144	CGGGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG GCGUAAA	10632
1574	CAUCUGC G GACCGUG	2145	ACACGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG GGCAGU	10633
1575	AUCUGCG G ACCGUG	2146	CACACGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CGGCAGU	10634
1612	CGUGCAU G GAGACCAC	2147	GUGGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG AUGCGAC	10635
1613	GUGCAUG G AGACCAC	2148	GGUGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CAUGCAC	10636
1615	CGCAUGA G ACCACCU	2149	ACGUGGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCCAUCCG	10637
1635	CGCCACA G GAACUCC	2150	GCAGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UGUGGCG	10638
1636	GCCACAG G AACUCC	2151	GGCAGGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CUGUGGC	10639
1648	CUGCCCA G GUCUUGCA	2152	UGCAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UUGGCG	10640
1660	UUGCAUA G AGGACUCU	2153	AGUCCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UUAUGCA	10641
1662	GCAUAAG G GACUCUUG	2154	CAAGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCUUAUG	10642
1663	CAUAAGAG G ACUCUUG	2155	CCAGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CUCUUAUG	10643
1670	GCACUCU G GACUUA	2156	UGAAAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG AAGUCC	10644
1671	GACUCUUG G ACUUCAG	2157	CUGAAAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CAAGUCC	10645
1702	GACCUUGA G GCAUACU	2158	AAGUAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCAAGUCC	10646
1715	ACUUCAAA G ACUGUG	2159	CACACAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UUUGAAGU	10647
1734	UAUAGAGU G GGAGGAGU	2160	ACUCCUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG ACUCAUA	10648
1735	AAUAGAGU G GAGGAGU	2161	AACUCCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CACUCAU	10649
1736	AUGAGUG G AGGAGUUG	2162	CAACUCCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCACUCAU	10650
1738	GAGUGGGA G GAGUUGG	2163	CCCAACU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCCACUC	10651
1739	AGUGGGAG G AGUUGGG	2164	CCCCAACU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CUCCACU	10652
1744	GAGGAGU G GGGGAGGA	2165	UCCUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG AACUCCU	10653
1745	AGGAGUUG G GGGAGGAG	2166	CUCUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CAACUCCU	10654
1746	GGAGUUG G GGAGGAG	2167	CCUCCUCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCAACUCC	10655
1747	GAGUUGG G GAGGAGU	2168	ACCUCCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCAACUCC	10656
1748	AGUUGGG G AGGAGGU	2169	AACUCCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CCAACUCC	10657
1750	UUGGGGA G GAGGUAG	2170	CUAACCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCCCCAA	10658
1751	UGGGGAG G AGGUUAG	2171	CCUACCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGG CUCCCCA	10659
1753	GGGGAGGA G GUUAGGU	2172	AACCUAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGG UCCUCCC	10660

1758	GGAGGUUA G GUUAAAGG	2173	CCUUUAA C GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAACCUCC	10661
1765	AGGUUAAA G GUCUUUGU	2174	ACAAAGAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUUAAACU	10662
1778	UGUACUA G GAGGCUU	2175	ACAGCUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAGUACAA	10663
1779	UGUACUAG G AGGCUUA	2176	UACAGCCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CUAGUACA	10664
1781	UACUAGGA G GCUUAGG	2177	CCUACAGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCCUAGUA	10665
1788	AGGCUUA G GCAUAAU	2178	AUUUAUGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UACAGCCU	10666
1798	CAUAAAU G GUGUGUUC	2179	GAACACAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUUUAUG	10667
1888	UGUGCCUU G GUGGCUU	2180	AAGCCACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAGGCACA	10668
1889	GUGCCUUG G GUGGCUU	2181	AAAGCCAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAAGGCAC	10669
1892	CCUUGGGU G GCUUUGG	2182	CCCAAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACCCAAGG	10670
1898	GUGGCUUU G GGGCAUG	2183	CCAUGCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAAGCCAC	10671
1899	UGGCUUUG G GCAUGGA	2184	UCCAUGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAAGCCA	10672
1900	GGCUUUGG G GCAUGGAC	2185	GUCCAUGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAAAGCC	10673
1905	UGGGGCAU G GACAUUGA	2186	UCAUUGUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AUGCCCCA	10674
1906	GGGGCAUG G ACAUUGAC	2187	GUCAAUGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAUGCCCC	10675
1924	CGUAUAAA G AAUUGGA	2188	UCCAAAUU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UUUUAACG	10676
1930	AAGAAUUU G GAGCUUCU	2189	AGAAGCUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AAUUCUU	10677
1931	AGAAUUG G AGCUCUG	2190	CAGAAGCU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAAUUCU	10678
1941	GCUCUCUG G GAGUUAU	2191	AGUAACUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACAGAAGC	10679
1942	CUUCUCUG G AGUUAUC	2192	GAGUAACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CACAGAAG	10680
1987	CUAUUCGA G AUCUCCUC	2193	GAGGAGAU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UCGAAUAG	10681
2018	UCUGUAUC G GGGGGCU	2194	AGGCCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GAUACAGA	10682
2019	CUGUAUCG G GGGGCCUU	2195	AAGGCCCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGAUACAG	10683
2020	UGUAUCGG G GGGCCUUA	2196	UAAGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGAUACA	10684
2021	GUUAUCGG G GGCCUUG	2197	CUAAGGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCGAUAC	10685
2022	UAUCGGGG G GCCUUGA	2198	UCUAAGC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCCC GAUA	10686
2029	GGGCCUUA G AGUCUCG	2199	CGGAGACU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UAAAGGCC	10687
2037	GAGUCUCC G GAACAUUG	2200	CAAUUDC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GGAGACUC	10688
2038	AGUCUCCG G AACAUUGU	2201	ACAAUGU GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CGGAGACU	10689
2061	CACCAUAC G GCACUCAG	2202	CUGAGUC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG GUUUGUG	10690
2069	GGCACUA G GCAAGCUA	2203	UAGCUDC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG UGAGUGCC	10691
2087	UCUGUUTU G GGGUGAGU	2204	ACUCACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AACACAGA	10692
2088	CUGUGUUG G GGUGAGUU	2205	AACUCACC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAACACAG	10693
2089	UGUGUUGG G GUGAGUUG	2206	CAACUCAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CCAACACA	10694
2114	AGCCACCU G GGUGGAA	2207	UUCACCAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG AGGUGGCU	10695
2115	GCCACCU G GUGGGAAG	2208	CUUCCAC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG CAGGUGGC	10696
2118	ACUUGGU G GGAAGUA	2209	UUACUCC GGAGGAAACUCC CU UCAAGGACAUCGUCGCGG ACCAGGU	10697

2119	CUUGGUG G GAAGUAAU	2210	AUACUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CACCAGG	10698
2120	CUGGGUG G AAGUAAU	2211	AAUACUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCACCAG	10699
2130	AGUAAUU G GAAGUCC	2212	GGAUUCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AAAUUACU	10700
2131	GUAAUUU G AAGAUCCA	2213	UGGAUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAAAUUAC	10701
2134	AUUUGAA G AUCCAGCA	2214	UGCUGGAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCCAAUU	10702
2147	AGCAUCCA G GGAUUAG	2215	CUAAUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGGAUGCU	10703
2148	GCAUCCAG G GAAUUAGU	2216	ACUAAUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CUGGAUGC	10704
2149	CAUCCAGG G AAUUAGUA	2217	UACUAAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCUGGAUG	10705
2181	GUUAAUUAU G GGCCUAAA	2218	UUUAGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AUAUUAA	10706
2182	UUAAUUAU G GCCUAAA	2219	UUUAGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAUAUUAA	10707
2195	AAAAUUA G AACUUAU	2220	AUAGUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACAUUAU	10708
2207	ACUAAUUAU G GUUUCACA	2221	UGGAAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACAAUAGU	10709
2233	UUACUUU G GCGAGAA	2222	UUCUGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AAAAGUAA	10710
2234	UACUUU G GCGAGAA	2223	UUUUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAAAAGUA	10711
2239	UUGGGGA G AACUGUU	2224	AAAGUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UCGCCCAA	10712
2259	GAUAAUU G GUGUCUUU	2225	AAAGAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AAAUAUUC	10713
2269	UGUCUUU G GAGUGUGG	2226	CCACACU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AAAGACA	10714
2270	GUUUUU G AGUGUGGA	2227	UCCACAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAAAGAC	10715
2276	UGGAGUU G GAUUCGCA	2228	UGGAAUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACACUCCA	10716
2277	GGAGUG G AUUCGCAC	2229	GUGGAAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CACACUCC	10717
2300	UGCAUUA G ACCACCAA	2230	UUGUGGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUAUGCA	10718
2334	ACAUUC G GAAAUAC	2231	GUAGUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GGAAGUGU	10719
2335	CACUCCG G AAUAUACU	2232	AGUAGUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CGGAAGUG	10720
2351	UGUUGUA G ACGAAGAG	2233	CUCUUGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UAACAACA	10721
2357	UAGACGA G AGGAGGU	2234	ACUUGCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCGUCUA	10722
2359	GACGAAG G GCGAGUCC	2235	GGACUUG GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UCUUCGUC	10723
2363	AAGAGGA G GUCCCUUA	2236	UAGGGAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGCUUUU	10724
2372	GUCCCUUA G AAGAAGAA	2237	UUUUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UAGGGAC	10725
2375	CCUAGAA G AAGAUCU	2238	GAGUUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCUAGG	10726
2378	UAGAAGAA G AACUCCU	2239	AGGAGUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCUUA	10727
2396	GCCUCGA G ACGAAGGU	2240	ACUUCGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGCGAGG	10728
2402	CAGACGA G GUUCUAAU	2241	AUUGAGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCGUCUG	10729
2423	GGUCGCA G AAGAUUC	2242	GAGAUUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGCGACG	10730
2426	UGGAGAA G AUUCUAAU	2243	AUUGAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCUGCGA	10731
2438	UCAAUUC G GGAUUCU	2244	GAGAUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GAGAUUGA	10732
2439	CAAUUCG G GAAUUCU	2245	UGAGAUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CGAGAUUG	10733
2440	AAUUCGG G AAUUCUAA	2246	UUGAGAU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCGAGAUU	10734

2463	UAUUCUUU G GACACAU	2247	UAUGUGUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG AAGGAAUA	10735
2464	AUUCUUUG G ACACAUAA	2248	UUUAUGUGU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CAAGGAAU	10736
2473	ACACAUAA G GUGGGA	2249	UUUCCAC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UUAUGUGU	10737
2476	CAUAAGGU G GGAACUU	2250	AAGUUCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG ACCUUUUG	10738
2477	AUAAGGUG G GAAACUUU	2251	AAAGUUUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CACCUUUAU	10739
2478	UAAGGUGG G AAACUUUA	2252	UAAAGUUU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCACCUUA	10740
2488	AACUUUAC G GGGCUUUA	2253	UAAAGCCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG GUAAAGUU	10741
2489	ACUUUACG G GGUUUUAU	2254	AUAAAGCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CGUAAAGU	10742
2490	CUUUACGG G GCUUUUAU	2255	AAUAAAGC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCGUAAAG	10743
2506	UCUUUCUAC G GUACCUUG	2256	CAAGGUAC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG GUAGAAGA	10744
2529	UCCUAAAU G GCAACUC	2257	GAGUUUGC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG AUUUAGGA	10745
2563	CAUUUGCA G GAGGACAU	2258	AUGUCUUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UGCAAAUG	10746
2564	AUUUGCAG G AGGACAUU	2259	AAUGUCCU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CUUGCAA	10747
2566	UUGCAGGA G GACAUUGU	2260	ACAAUGUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UCCUGCAA	10748
2567	UGCAGGAG G ACAUUGUU	2261	AACAAUGU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CUUCUGCA	10749
2580	UGUUGAUA G AUGUAAGC	2262	GCUUACAU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UAUAACA	10750
2596	CAAUUUUG G GGGCCCUU	2263	AGGGGCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG ACAAUUG	10751
2597	AAUUUGUG G GGC'CCCUU	2264	AAGGGCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CACAAAUU	10752
2598	AUUUGUG G GOC'CCCUA	2265	UAAAGGGC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCACAAAU	10753
2622	UGAAAACA G GAGACUUA	2266	UAAAGUCU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UGUUUUCA	10754
2623	GAAAACAG G AGACUUA	2267	UUAAAGUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CUGUUUUC	10755
2625	AAACAGGA G ACUUAUAA	2268	AUUUAAGU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UCCUGUUU	10756
2649	GCCUGCUA G GUUUUAUC	2269	GAUAAAC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UAGCAGGC	10757
2684	UGCCCUUA G AUAAAGG	2270	CCUUUAU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UAAAGGGA	10758
2690	UAGAUAAA G GAUCAAA	2271	UUUGAUCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UUAUUCUA	10759
2691	AGAUAAAG G GAUCAAC	2272	GUUGAUCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CUUUUAUC	10760
2692	GAUAAAGG G AUCAACC	2273	GGUUUAU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCUUUAUC	10761
2711	AUAUCCA G AGUUGUA	2274	UACUAUCC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UGGAUAAU	10762
2737	UACUCCA G ACGGACA	2275	UGUCGGU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UGGAAGUA	10763
2763	CACUUUU G GAAGCGG	2276	CCGCCUUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG AAAGAGUG	10764
2764	ACUCUUUG G AAGCGGG	2277	CCGCCUU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CAAAGAGU	10765
2767	CUUUGGA G GCGGGGAU	2278	AUCCCGC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UUCCAAAG	10766
2770	UGGAAGGC G GGAUCUUU	2279	AAGAUCU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG GCCUCCA	10767
2771	GGAAGGC G GGAUCUUA	2280	UAAGAUC GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CGCUUCC	10768
2772	GAAGCGG G GAUCUUUA	2281	AUAAGAU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCGCUUC	10769
2773	AAGCGGG G AUUCUUA	2282	UAUAGAU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG CCGCCUU	10770
2787	AUAUAAA G AGAUCCA	2283	UGGACUCU GGAGGAAACUCC CU UCAAGGACAUUCUCCGGG UUUUAUUA	10771

2789	AUAAAGA G AGUCCACA	2284	UGUGGACU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UCUUUUAU	10772
2816	CAUUUUGC G GGUCACCA	2285	UGGUGACC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG GCACAAUUG	10773
2817	AUUUGCG G GUCACCAU	2286	AUGGUGAC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CGCAAAAU	10774
2832	AUAUUCU G GGAACAAG	2287	CUUGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AGAAUAU	10775
2833	UAUUCUG G GAACAAGA	2288	UCUUGUUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CAAGAAUA	10776
2834	AUUCUUGG G AACAGAUA	2289	AUCUUGUU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAAGAAU	10777
2840	GGGAACAA G AUCUACAG	2290	CUGUAGAU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UUGUUCUCC	10778
2852	UACAGCAU G GGAGGUUG	2291	CAACUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AUGCUGUA	10779
2853	ACAGCAUG G GAGGUUGG	2292	CCAACUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CAUGCUGU	10780
2854	CAGCAUGG G AGGUUGGU	2293	ACCAACCU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAUGCUG	10781
2856	GCAUGGGA G GUUGGUUC	2294	AGACCAAC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UCCCAUGC	10782
2860	GGGAGGUU G GUCUUCCA	2295	UGGAAGAC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AACCUCCC	10783
2880	CUCGAAA G GCAUGGGG	2296	CCCCAUGC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UUUUCGAG	10784
2885	AAAGGCAU G GGGACAAA	2297	UUUGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AUGCCUUU	10785
2886	AAGGCAUG G GGACAAAU	2298	AUUUGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CAUGCCUU	10786
2887	AGGCAUGG G GACAAAU	2299	GAUUUGUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAUGCCU	10787
2888	GGCAUGGG G ACAAAUCU	2300	AGAUUUGU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAUGCC	10788
2915	AUUCUCCU G GGAUUCUU	2301	AAGAAUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AGGGAAU	10789
2916	AUCCUCCU G GAUUCUUC	2302	GAAGAAUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CAGGGAAU	10790
2917	UCCUCCUG G AUUCUUC	2303	GGAAAGAU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAGGGGA	10791
2939	CAUCAGUU G GACCCUGC	2304	GCAGGGUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AACUGAUG	10792
2940	AUCAGUUG G ACCUUGCA	2305	UGCAGGGU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAUCUGAU	10793
2973	UAAUCCA G AUUGGAC	2306	GUCCCAU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UGGAUUUA	10794
2977	UCCAGAUU G GGACCUCA	2307	UGAGGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AAUCUGGA	10795
2978	CCAGAUUG G GACCUCAA	2308	UUUGAGGU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CAAUCUGG	10796
2979	CAGAUUGG G ACUCUAC	2309	GUUGAGGU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCAUCUG	10797
2996	CCGACAA G GACAAUG	2310	CAGUUGUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UUGUGCGG	10798
2997	CGCACAAG G ACAACUGG	2311	CCAGUUGU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CUUGUGCG	10799
3004	GGACAACU G GCCGGACG	2312	CGUCCGGC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG AGUUGUCC	10800
3008	AACUGGCC G GACGCCAA	2313	UUUGCGUC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG GGCCAGUU	10801
3009	ACUGGCCG G ACGCCAAC	2314	GUUGCGCU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CGGCCAGU	10802
3020	GCCAACAA G GUGGGAGU	2315	ACUCCAC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG UUGUUGGC	10803
3023	AACAAGGU G GGAGUGGG	2316	CCCACUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG ACCUUGUU	10804
3024	ACAAGGUG G GAGUGGGA	2317	UCCACUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CACCUUGU	10805
3025	CAAGGUGG G AGUGGGAG	2318	CUCCACU GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CCACCUUG	10806
3029	GUGGAGU G GGAGCAUU	2319	AAUGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG ACUCCAC	10807
3030	UGGAGUG G GAGCAUUC	2320	GAUUGUCC GGAGAAACUCC CU UCAAGGACAUUGUCCGGG CACUCCCA	10808

3031	GGGAGUGG G AGCAUUCG	2321	CGAUGCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCACUCCC	10809
3039	GAGCAUUC G GGCAGGG	2322	CCCUGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GAAUGCUC	10810
3040	AGCAUUC G GCCAGGU	2323	ACCUUGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CGAAUGCU	10811
3045	UCGGGCCA G GGUACAC	2324	GGUGAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGGCCCGA	10812
3046	CGGCCCAG G GUUCACCC	2325	GGUGAAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGGCCCG	10813
3063	CUCCCCAU G GGGACUG	2326	CAGUCCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AUGGGAG	10814
3064	UCCCCAUG G GGGACUG	2327	ACAGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAUGGGGA	10815
3065	CCCCAUGG G GACUGUU	2328	AACAGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAUGGGG	10816
3066	CCAUGGG G GACUGUUG	2329	CAACAGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAUGGG	10817
3067	CCAUGGG G ACUGUUGG	2330	CCAACAGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAUGG	10818
3074	GGACUGUU G GGGUGGAG	2331	CUCCACC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG AACAGUCC	10819
3075	GACUGUUG G GUGGAGC	2332	GUCCACC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CAACAGUC	10820
3076	ACUGUUGG G GUGGAGC	2333	GGUCCAC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCAACAGU	10821
3079	GUUGGGGU G GAGCCUUC	2334	GAGGGUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG ACCCAAC	10822
3080	UUGGGGUG G AGCCUCA	2335	UGAGGGCU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CACCCCAA	10823
3095	CACGCUCA G GGCUCUACU	2336	AGUAGGCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGAGCGUG	10824
3096	AGGUCAG G GCCUACUC	2337	GAGUAGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CUGAGCGU	10825
3145	CACCAUC G GCAGUCAG	2338	CUGACUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG GAUUGGUG	10826
3153	GGCAGUCA G GAAGGCAG	2339	UGGCCUUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGACUGCC	10827
3154	GCAGUCAG G AAGGCAGC	2340	GCUGCCUU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CUGACUGC	10828
3157	GUCAGGAA G GCAGCCUA	2341	UAGGCUGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUCUUGAC	10829
3187	ACCUCUAA G GGACACUC	2342	GAGUGUCC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UUAGAGGU	10830
3188	CCUCUAA G GACACUCA	2343	UGAGUGUC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CUUAGAGG	10831
3189	CUCUAAG G ACACUCAU	2344	AUGAGUGU GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG CCUAGAG	10832
3203	CAUCCUCA G GCCAUGCA	2345	UGCAUGGC GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG UGAGGAUG	10833

Input Sequence = AF100308. Cut Site = YG/M or UG/U.

Stem Length = 8. Core Sequence = GGAGGAAACUCC CU UCAAGGACAUCGUCCGGG

AF100308 (Hepatitis B virus strain 2-18, 3215 bp)

Table XI: Human HBV Enzymatic Nucleic Acid and Target Sequence

Pos	SUBSTRATE	Seq ID	RPI#	Ribozyme Alias	ENZYMATIC NUCLEIC ACID	Seq ID
313	CCAAAU U CGCAGUC	2346	18157	HBV-313 Rz-7 RNA	GACUGCG CUGAUGAGGCCGUUAGGCCGAA AUUUUGG B	10834
327	CCAAAU C UCCAGUC	2347	18158	HBV-327 Rz-7 RNA	GACUGGA CUGAUGAGGCCGUUAGGCCGAA AUUUUGG B	10835
334	CUCCAGU C ACUCACC	2348	18159	HBV-334 Rz-7 RNA	GGUGAGU CUGAUGAGGCCGUUAGGCCGAA ACUGGAG B	10836
408	UCUUCU C UGCAUCC	2349	18160	HBV-408 Rz-7 RNA	GGAUCCA CUGAUGAGGCCGUUAGGCCGAA AGGAAGA B	10837
557	UCUAUGU U UCCCUCA	2350	18161	HBV-557 Rz-7 RNA	UGAGGGA CUGAUGAGGCCGUUAGGCCGAA ACAUAGA B	10838
1255	UUUGUGU C UCCUCUG	2351	18162	HBV-1255 Rz-7 RNA	CACAGGA CUGAUGAGGCCGUUAGGCCGAA ACACAAA B	10839
1538	CCUCUCU U UACGCGG	2352	18163	HBV-1538 Rz-7 RNA	CCGCGUA CUGAUGAGGCCGUUAGGCCGAA AGAGAGG B	10840
1756	AGGAGGU U AGGUUAA	2353	18164	HBV-1756 Rz-7 RNA	UUAAACU CUGAUGAGGCCGUUAGGCCGAA ACCUCCU B	10841
1861	AUGUCCU A CUGUUCA	2354	18165	HBV-1861 Rz-7 RNA	UGAACAG CUGAUGAGGCCGUUAGGCCGAA AGGACAU B	10842
2504	UUCUUCU A CGGUACC	2355	18166	HBV-2504 Rz-7 RNA	GGUACCG CUGAUGAGGCCGUUAGGCCGAA AGAAGAA B	10843
10	CUCCACC A CUUCCA	2356	18197	HBV-10 CHZ-7 RNA	UGGAAAG CUGAUGAGGCCGUUAGGCCGAA GGUGGAG B	10844
335	UCCAGUC A CUCACCA	2357	18198	HBV-335 CHZ-7 RNA	UGGUGAG CUGAUGAGGCCGUUAGGCCGAA GACUGGA B	10845
1258	GUGUCUC C UCUGCCG	2358	18199	HBV-1258 CHZ-7 RNA	CGGCAGA CUGAUGAGGCCGUUAGGCCGAA GAGACAC B	10846
2307	GACCACC A AAUGCCC	2359	18200	HBV-2307 CHZ-7 RNA	GGGCAUU CUGAUGAGGCCGUUAGGCCGAA GGUGGUC B	10847
347	UCACCAACCU G UUGUC	2360	18216	HBV-347 GCL.Rz-5/10 RNA	GACAA UGAUGGCAUGCACAUGCGCG AGGUUGUGA B	10848
350	CCAACCUUU G UCCUC	2361	18217	HBV-350 GCL.Rz-5/10 RNA	GAGGA UGAUGGCAUGCACAUGCGCG AACAGGUUG B	10849
1508	UCCGCCUAU G UACCG	2362	18218	HBV-1508 GCL.Rz-5/10 RNA	CGGUA UGAUGGCAUGCACAUGCGCG AAUAGGCGGA B	10850
234	AAUCCU C ACAUA	2363	18334	HBV-234 Rz-6 allyl stabl	u <sub>8</sub> a <sub>5</sub> u <sub>8</sub> g <sub>5</sub> uc cUGAUGagccguuagggccGaa Aggaau B	10851
252	GAGUCU A GACUCG	2364	18335	HBV-252 Rz-6 allyl stabl	c <sub>8</sub> g <sub>5</sub> a <sub>8</sub> g <sub>5</sub> uc cUGAUGagccguuagggccGaa Agacuc B	10852
268	UGGACU U CUCUCA	2365	18337	HBV-268 Rz-6 allyl stabl	u <sub>8</sub> g <sub>5</sub> a <sub>8</sub> g <sub>5</sub> ag cUGAUGagccguuagggccGaa Agucca B	10853
280	AAUUUU C UAGGGG	2366	18345	HBV-280 Rz-6 allyl stabl	c <sub>8</sub> c <sub>8</sub> c <sub>8</sub> g <sub>5</sub> ua cUGAUGagccguuagggccGaa Aaaaau B	10854
313	CAAAAU U CGCAGU	2367	18346	HBV-313 Rz-6 allyl stabl	a <sub>8</sub> c <sub>8</sub> u <sub>8</sub> g <sub>5</sub> cg cUGAUGagccguuagggccGaa Anuuug B	10855
395	GGCGUU U UAUCAU	2368	18350	HBV-395 Rz-6 allyl stabl	a <sub>8</sub> u <sub>8</sub> g <sub>5</sub> a <sub>8</sub> ua cUGAUGagccguuagggccGaa Aacgcc B	10856
402	UAUCAU C UUCCUC	2369	18351	HBV-402 Rz-6 allyl stabl	g <sub>8</sub> a <sub>8</sub> g <sub>5</sub> g <sub>5</sub> aa cUGAUGagccguuagggccGaa Augaau B	10857
607	UGUAUU C CCAUCC	2370	18355	HBV-607 Rz-6 allyl stabl	g <sub>8</sub> g <sub>5</sub> a <sub>8</sub> u <sub>8</sub> g <sub>5</sub> g <sub>5</sub> cUGAUGagccguuagggccGaa Auauca B	10858
697	UUUGUU C AGUGGU	2371	18362	HBV-697 Rz-6 allyl stabl	a <sub>8</sub> c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> cu cUGAUGagccguuagggccGaa Aacaaa B	10859
1539	UCUCUU U ACGCGG	2372	18366	HBV-1539 Rz-6 allyl stabl	c <sub>8</sub> c <sub>8</sub> g <sub>5</sub> g <sub>5</sub> gu cUGAUGagccguuagggccGaa Aagaga B	10860
1599	UCACCU C UGCACG	2373	18367	HBV-1599 Rz-6 allyl stabl	c <sub>8</sub> g <sub>5</sub> u <sub>8</sub> g <sub>5</sub> ca cUGAUGagccguuagggccGaa Agguga B	10861
1607	GCACGU C GCAUGG	2374	18368	HBV-1607 Rz-6 allyl stabl	c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> u <sub>8</sub> g <sub>5</sub> c cUGAUGagccguuagggccGaa Acgugc B	10862
1833	UCACCU C UGCCTA	2375	18371	HBV-1833 Rz-6 allyl stabl	u <sub>8</sub> a <sub>8</sub> g <sub>5</sub> g <sub>5</sub> ca cUGAUGagccguuagggccGaa Agguga B	10863



2383	AGAACU C CCUCGC	2376	18374	HBV-2383 Rz-6 allyl stabl	G <sub>5</sub> C <sub>5</sub> G <sub>5</sub> <sup>a</sup> <sub>5</sub> gg cUGAuGaggccguuagggccGaa Aguuc B	10864
2429	GAAGAU C UCAAU C	2377	18376	HBV-2429 Rz-6 allyl stabl	G <sub>5</sub> a <sub>5</sub> u <sub>5</sub> <sup>a</sup> <sub>5</sub> ga cUGAuGaggccguuagggccGaa Aucuuc B	10865
2831	UAUUCU U GGAAC	2378	18379	HBV-2831 Rz-6 allyl stabl	G <sub>5</sub> u <sub>5</sub> u <sub>5</sub> <sup>a</sup> <sub>5</sub> cc cUGAuGaggccguuagggccGaa Agaaua B	10866
430	UGCCUC A UCUUCU	2379	18391	HBV-430 CHz-6 allyl stabl	a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ga cUGAuGaggccguuagggccGaa Iaggca B	10867
676	UGGCUC A GUUAC	2380	18396	HBV-676 CHz-6 allyl stabl	G <sub>5</sub> u <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> sac cUGAuGaggccguuagggccGaa Iagcca B	10868
683	GUUAC U AGUGCC	2381	18397	HBV-683 CHz-6 allyl stabl	G <sub>5</sub> g <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> scc cUGAuGaggccguuagggccGaa Iuaaac B	10869
1150	UUUACC C CGUUGC	2382	18402	HBV-1150 CHz-6 allyl stabl	G <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> cg cUGAuGaggccguuagggccGaa Iguaaa B	10870
1200	GCAACC C CCACUG	2383	18403	HBV-1200 CHz-6 allyl stabl	C <sub>5</sub> a <sub>5</sub> g <sub>5</sub> <sup>a</sup> <sub>5</sub> gg cUGAuGaggccguuagggccGaa Iguugc B	10871
1201	CAACCC C CACUGG	2384	18404	HBV-1201 CHz-6 allyl stabl	C <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> gug cUGAuGaggccguuagggccGaa Iggug B	10872
1444	CGGCGC U GAAUCC	2385	18405	HBV-1444 CHz-6 allyl stabl	G <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> uc cUGAuGaggccguuagggccGaa Icgccg B	10873
1451	GAAUCC C GCGGAC	2386	18406	HBV-1451 CHz-6 allyl stabl	G <sub>5</sub> u <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> sgc cUGAuGaggccguuagggccGaa Igauc B	10874
1533	CGCACCC U CUCUUU	2387	18407	HBV-1533 CHz-6 allyl stabl	a <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ggg cUGAuGaggccguuagggccGaa Igugcg B	10875
1600	CACUUC U GCACGU	2388	18410	HBV-1600 CHz-6 allyl stabl	a <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ggc cUGAuGaggccguuagggccGaa Iaggug B	10876
1698	CCGACC U UGAGGC	2389	18411	HBV-1698 CHz-6 allyl stabl	G <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ga cUGAuGaggccguuagggccGaa Igucgg B	10877
1784	GGAGGC U GUAGGC	2390	18412	HBV-1784 CHz-6 allyl stabl	G <sub>5</sub> c <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> sac cUGAuGaggccguuagggccGaa Iccucc B	10878
1829	UUUUC A CCUCUG	2391	18414	HBV-1829 CHz-6 allyl stabl	C <sub>5</sub> a <sub>5</sub> g <sub>5</sub> <sup>a</sup> <sub>5</sub> gg cUGAuGaggccguuagggccGaa Iaaaaa B	10879
1876	GCCUCC A AGCUGU	2392	18420	HBV-1876 CHz-6 allyl stabl	a <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> gsc cUGAuGaggccguuagggccGaa Igaggg B	10880
1880	CCRAGC U GUGCCU	2393	18422	HBV-1880 CHz-6 allyl stabl	a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> cg cUGAuGaggccguuagggccGaa Icuugg B	10881
218	UUUUUCU U GUUGACA	2394	18333	HBV-218 Rz-7 allyl stabl	u <sub>5</sub> g <sub>5</sub> u <sub>5</sub> <sup>a</sup> <sub>5</sub> caac cUGAuGaggccguuagggccGaa Agaaaa B	10882
257	CUAGACU C GUGGUGG	2395	18336	HBV-257 Rz-7 allyl stabl	C <sub>5</sub> c <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> cg cUGAuGaggccguuagggccGaa Agucuaag B	10883
268	GUGGACU U CUCUCAA	2396	18338	HBV-268 Rz-7 allyl stabl	u <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ggg cUGAuGaggccguuagggccGaa Aguccac B	10884
269	UGGACUU C UCUCAAU	2397	18339	HBV-269 Rz-7 allyl stabl	a <sub>5</sub> u <sub>5</sub> u <sub>5</sub> <sup>a</sup> <sub>5</sub> gga cUGAuGaggccguuagggccGaa Aaguca B	10885
271	GACUUCU C UCAAUUU	2398	18340	HBV-271 Rz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> u <sub>5</sub> ga cUGAuGaggccguuagggccGaa Agaaguc B	10886
273	CUUCUCU C AAUUUUC	2399	18341	HBV-273 Rz-7 allyl stabl	G <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> gaau cUGAuGaggccguuagggccGaa Agagaag B	10887
277	UCUCAU U UUCUAGG	2400	18342	HBV-277 Rz-7 allyl stabl	c <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> a <sub>5</sub> ga cUGAuGaggccguuagggccGaa Auugaga B	10888
278	CUCAAUU U UCUAGGG	2401	18343	HBV-278 Rz-7 allyl stabl	C <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> u <sub>5</sub> ga cUGAuGaggccguuagggccGaa Aauugag B	10889
279	UCAAUUU U CUAGGGG	2402	18344	HBV-279 Rz-7 allyl stabl	C <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> cg cUGAuGaggccguuagggccGaa Aaaunga B	10890
314	CAAAAUU C GCAGUCC	2403	18347	HBV-314 Rz-7 allyl stabl	G <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> cg cUGAuGaggccguuagggccGaa Aauuug B	10891
385	GAUGUGU C UGCGGCG	2404	18348	HBV-385 Rz-7 allyl stabl	C <sub>5</sub> g <sub>5</sub> <sup>a</sup> <sub>5</sub> c <sub>5</sub> ga cUGAuGaggccguuagggccGaa Acacauc B	10892
394	GCGGCGU U UUAUCAU	2405	18349	HBV-394 Rz-7 allyl stabl	a <sub>5</sub> u <sub>5</sub> g <sub>5</sub> <sup>a</sup> <sub>5</sub> uaa cUGAuGaggccguuagggccGaa Acgccgc B	10893
402	UUAUCAU C UUCUCUC	2406	18352	HBV-402 Rz-7 allyl stabl	a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> ga cUGAuGaggccguuagggccGaa Augaua B	10894
423	UGCUGCU A UGCCUCA	2407	18353	HBV-423 Rz-7 allyl stabl	u <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> gca cUGAuGaggccguuagggccGaa Agcagca B	10895
429	UAUGCCU C AUUCUCU	2408	18354	HBV-429 Rz-7 allyl stabl	a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> <sup>a</sup> <sub>5</sub> gau cUGAuGaggccguuagggccGaa Aggcaua B	10896
679	GCUCAGU U UACUAGU	2409	18356	HBV-679 Rz-7 allyl stabl	a <sub>5</sub> c <sub>5</sub> <sup>a</sup> <sub>5</sub> u <sub>5</sub> a <sub>5</sub> gua cUGAuGaggccguuagggccGaa Acugagc B	10897



680	CUCAGU U ACUAGUG	2410	18357	HBV-680 Rz-7 allyl stabl	C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> U <sub>5</sub> agu	cUGAuGagggccguuaggccGaa Aacugag B	10898
681	UCAGUUU A CUAGUGC	2411	18358	HBV-681 Rz-7 allyl stabl	G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> guag	cUGAuGagggccguuaggccGaa Aaacuga B	10899
684	GUUUAU A GUGCCAU	2412	18359	HBV-684 Rz-7 allyl stabl	a <sub>5</sub> u <sub>5</sub> g <sub>5</sub> g <sub>5</sub> cac	cUGAuGagggccguuaggccGaa Aguaaac B	10900
692	GUGCCAU U UGUUCAG	2413	18360	HBV-692 Rz-7 allyl stabl	C <sub>5</sub> U <sub>5</sub> g <sub>5</sub> g <sub>5</sub> aca	cUGAuGagggccguuaggccGaa Auggcac B	10901
693	UGCCAUU U GUUCAGU	2414	18361	HBV-693 Rz-7 allyl stabl	a <sub>5</sub> C <sub>5</sub> u <sub>5</sub> g <sub>5</sub> aac	cUGAuGagggccguuaggccGaa Auaggca B	10902
1534	CGCACCU C UCUIUAC	2415	18363	HBV-1534 Rz-7 allyl stabl	G <sub>5</sub> u <sub>5</sub> g <sub>5</sub> a <sub>5</sub> g <sub>5</sub> aga	cUGAuGagggccguuaggccGaa Aggugcg B	10903
1536	CACCUU C UUUACGC	2416	18364	HBV-1536 Rz-7 allyl stabl	G <sub>5</sub> C <sub>5</sub> g <sub>5</sub> g <sub>5</sub> aaa	cUGAuGagggccguuaggccGaa Agagagg B	10904
1538	CCUCUCU U UACGGCG	2352	18365	HBV-1538 Rz-7 allyl stabl	C <sub>5</sub> C <sub>5</sub> g <sub>5</sub> C <sub>5</sub> gua	cUGAuGagggccguuaggccGaa Acagccu B	10905
1787	AGGCUGU A GGCAUAA	2417	18369	HBV-1787 Rz-7 allyl stabl	U <sub>5</sub> u <sub>5</sub> a <sub>5</sub> U <sub>5</sub> gccc	cUGAuGagggccguuaggccGaa Augccua B	10906
1793	UAGGCAU A AAUUGGU	2418	18370	HBV-1793 Rz-7 allyl stabl	a <sub>5</sub> C <sub>5</sub> C <sub>5</sub> g <sub>5</sub> auu	cUGAuGagggccguuaggccGaa Augccua B	10907
1874	CAAGCCU C CAAGCUG	2419	18372	HBV-1874 Rz-7 allyl stabl	C <sub>5</sub> a <sub>5</sub> g <sub>5</sub> C <sub>5</sub> uug	cUGAuGagggccguuaggccGaa Aggcuug B	10908
1887	UGUGCCU U GGGUGGC	2420	18373	HBV-1887 Rz-7 allyl stabl	G <sub>5</sub> C <sub>5</sub> C <sub>5</sub> a <sub>5</sub> ccc	cUGAuGagggccguuaggccGaa Aggcaca B	10909
2383	AAGAAU C CCUCGCC	2421	18375	HBV-2383 Rz-7 allyl stabl	G <sub>5</sub> g <sub>5</sub> C <sub>5</sub> g <sub>5</sub> agg	cUGAuGagggccguuaggccGaa Aguuuuu B	10910
2828	ACCAUUAU U CUUGGGA	2422	18377	HBV-2828 Rz-7 allyl stabl	U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> g <sub>5</sub> aag	cUGAuGagggccguuaggccGaa Auauugu B	10911
2829	CCAUAU C UUGGGAA	2423	18378	HBV-2829 Rz-7 allyl stabl	U <sub>5</sub> U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> caa	cUGAuGagggccguuaggccGaa Auauugg B	10912
2831	AUAUUCU U GGGAACA	2424	18380	HBV-2831 Rz-7 allyl stabl	U <sub>5</sub> g <sub>5</sub> u <sub>5</sub> U <sub>5</sub> gccc	cUGAuGagggccguuaggccGaa Agaaauu B	10913
256	UCUAGAC U CGUGGUG	2425	18381	HBV-256 CHz-7 allyl stabl	C <sub>5</sub> a <sub>5</sub> C <sub>5</sub> C <sub>5</sub> acg	cUGAuGagggccguuaggccGaa Iucuaga B	10914
267	GGUGAC U UCUCUCA	2426	18382	HBV-267 CHz-7 allyl stabl	U <sub>5</sub> g <sub>5</sub> a <sub>5</sub> g <sub>5</sub> aga	cUGAuGagggccguuaggccGaa Iuccacc B	10915
270	GGACUUC U CUCAAUU	2427	18383	HBV-270 CHz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> u <sub>5</sub> U <sub>5</sub> gag	cUGAuGagggccguuaggccGaa Iaaqucc B	10916
272	ACUUCUC U CAAUUUU	2428	18384	HBV-272 CHz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uug	cUGAuGagggccguuaggccGaa Iagaagu B	10917
274	UUCUCUC A AUUUUCU	2429	18385	HBV-274 CHz-7 allyl stabl	a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> a <sub>5</sub> auu	cUGAuGagggccguuaggccGaa Iagagaa B	10918
386	AUGUGUC U GCGGCGU	2430	18386	HBV-386 CHz-7 allyl stabl	a <sub>5</sub> C <sub>5</sub> g <sub>5</sub> C <sub>5</sub> g <sub>5</sub> cgc	cUGAuGagggccguuaggccGaa Iacacau B	10919
419	AUCCUGC U GCUAUGC	2431	18387	HBV-419 CHz-7 allyl stabl	G <sub>5</sub> C <sub>5</sub> a <sub>5</sub> U <sub>5</sub> gagc	cUGAuGagggccguuaggccGaa Icaggau B	10920
422	CUGCUGC U AUGCCUC	2432	18388	HBV-422 CHz-7 allyl stabl	G <sub>5</sub> a <sub>5</sub> g <sub>5</sub> g <sub>5</sub> cau	cUGAuGagggccguuaggccGaa Icagcag B	10921
427	CUAUGC C UCAUCUU	2433	18389	HBV-427 CHz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> uga	cUGAuGagggccguuaggccGaa Icauagc B	10922
428	CUAUGC C CAUCUUC	2434	18390	HBV-428 CHz-7 allyl stabl	G <sub>5</sub> a <sub>5</sub> g <sub>5</sub> g <sub>5</sub> aug	cUGAuGagggccguuaggccGaa Igcauag B	10923
430	AUGCCUC A UCUIUCU	2435	18392	HBV-430 CHz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> aga	cUGAuGagggccguuaggccGaa Iaggcau B	10924
608	UGUAUUC C CAUCCCA	2436	18393	HBV-608 CHz-7 allyl stabl	U <sub>5</sub> g <sub>5</sub> g <sub>5</sub> g <sub>5</sub> aug	cUGAuGagggccguuaggccGaa Iaaucac B	10925
609	GUUAUCC C AUCCCAU	2437	18394	HBV-609 CHz-7 allyl stabl	a <sub>5</sub> U <sub>5</sub> g <sub>5</sub> g <sub>5</sub> gau	cUGAuGagggccguuaggccGaa Igaaauac B	10926
669	GUUUCUC U UGGCUCA	2438	18395	HBV-669 CHz-7 allyl stabl	U <sub>5</sub> g <sub>5</sub> a <sub>5</sub> g <sub>5</sub> cca	cUGAuGagggccguuaggccGaa Iagaaac B	10927
689	CUAUGC C AUUUGUU	2439	18398	HBV-689 CHz-7 allyl stabl	a <sub>5</sub> a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> auu	cUGAuGagggccguuaggccGaa Icacuag B	10928
690	UAGUGCC A UUUGUUC	2440	18399	HBV-690 CHz-7 allyl stabl	G <sub>5</sub> a <sub>5</sub> a <sub>5</sub> C <sub>5</sub> aaa	cUGAuGagggccguuaggccGaa Igcacua B	10929
718	GCUIUCC C CCACUGU	2441	18400	HBV-718 CHz-7 allyl stabl	a <sub>5</sub> C <sub>5</sub> a <sub>5</sub> g <sub>5</sub> ugg	cUGAuGagggccguuaggccGaa Igaaagc B	10930
1149	CCUIUAC C CCGUUGC	2442	18401	HBV-1149 CHz-7 allyl stabl	G <sub>5</sub> C <sub>5</sub> a <sub>5</sub> a <sub>5</sub> cgg	cUGAuGagggccguuaggccGaa Iuaaagg B	10931

1535	GCACCUC U CUUAGG	2443	18408	HBV-1535 CHz-7 allyl stabl	C <sub>8</sub> S <sub>8</sub> U <sub>8</sub> a <sub>8</sub> ag cUGAUgagccgcuuagggccGaa Iagguc B	10932
1537	ACCUCUC U UUACGG	2444	18409	HBV-1537 CHz-7 allyl stabl	C <sub>8</sub> S <sub>8</sub> C <sub>8</sub> g <sub>8</sub> uaa cUGAUgagccgcuuagggccGaa Iagaggu B	10933
1791	UGUAGGC A UAAAUUG	2445	18413	HBV-1791 CHz-7 allyl stabl	C <sub>8</sub> a <sub>8</sub> s <sub>8</sub> u <sub>8</sub> uaa cUGAUgagccgcuuagggccGaa Iccuaca B	10934
1831	UUUUCAC C UCUGCCU	2446	18415	HBV-1831 CHz-7 allyl stabl	a <sub>8</sub> g <sub>8</sub> s <sub>8</sub> c <sub>8</sub> aga cUGAUgagccgcuuagggccGaa Iugaaaa B	10935
1832	UUUCACC U CUGCCUA	2447	18416	HBV-1832 CHz-7 allyl stabl	u <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> cag cUGAUgagccgcuuagggccGaa Iugaaa B	10936
1872	UUCAGC C UCACAGC	2448	18417	HBV-1872 CHz-7 allyl stabl	g <sub>8</sub> c <sub>8</sub> s <sub>8</sub> u <sub>8</sub> gga cUGAUgagccgcuuagggccGaa Icuugaa B	10937
1873	UCAAGCC U CCAAGCU	2449	18418	HBV-1873 CHz-7 allyl stabl	a <sub>8</sub> g <sub>8</sub> c <sub>8</sub> s <sub>8</sub> u <sub>8</sub> gg cUGAUgagccgcuuagggccGaa Igcuuga B	10938
1875	AAGCCUC C AAGCUGU	2450	18419	HBV-1875 CHz-7 allyl stabl	a <sub>8</sub> c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> s <sub>8</sub> cuu cUGAUgagccgcuuagggccGaa Iaggcuu B	10939
1876	AGCCUCC A AGCUGUG	2451	18421	HBV-1876 CHz-7 allyl stabl	C <sub>8</sub> a <sub>8</sub> c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> cu cUGAUgagccgcuuagggccGaa Iaggcu B	10940
1880	UCCAAGC U GUGCCUU	2452	18423	HBV-1880 CHz-7 allyl stabl	a <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> cac cUGAUgagccgcuuagggccGaa Icuugga B	10941
2382	GAAGAAC U CCCUGGC	2453	18424	HBV-2382 CHz-7 allyl stabl	g <sub>8</sub> c <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> gg cUGAUgagccgcuuagggccGaa Iuucuu B	10942
2384	AGAACUC C CUCGCCU	2454	18425	HBV-2384 CHz-7 allyl stabl	a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> c <sub>8</sub> gag cUGAUgagccgcuuagggccGaa Iaguucu B	10943
2385	GAACUCC C UCGCCUC	2455	18426	HBV-2385 CHz-7 allyl stabl	g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> s <sub>8</sub> gga cUGAUgagccgcuuagggccGaa Igaguuc B	10944
2422	GCGUCCG A GAAGAUC	2456	18427	HBV-2422 CHz-7 allyl stabl	g <sub>8</sub> a <sub>8</sub> u <sub>8</sub> c <sub>8</sub> guu cUGAUgagccgcuuagggccGaa Icgacgc B	10945
2830	CAUAUUC U UGGAAC	2457	18428	HBV-2830 CHz-7 allyl stabl	g <sub>8</sub> u <sub>8</sub> u <sub>8</sub> c <sub>8</sub> cca cUGAUgagccgcuuagggccGaa Iaaauug B	10946
234	AAUCCU C ACAAUA	2363	19179	HBV-234 Rz-6 amino stabl	u <sub>8</sub> a <sub>8</sub> u <sub>8</sub> u <sub>8</sub> ggu cUGAUgagccgcuuagggccGaa Aggaau B	10947
252	GAGUCU A GACUCG	2364	19180	HBV-252 Rz-6 amino stabl	C <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> uc cUGAUgagccgcuuagggccGaa Agacuc B	10948
268	UGGACU U CUCUCA	2365	19182	HBV-268 Rz-6 amino stabl	u <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> ag cUGAUgagccgcuuagggccGaa Agucca B	10949
280	AAUUDU C UAGGGG	2366	19190	HBV-280 Rz-6 amino stabl	C <sub>8</sub> c <sub>8</sub> c <sub>8</sub> s <sub>8</sub> ua cUGAUgagccgcuuagggccGaa Aaaaau B	10950
313	CAAAAU U CGCAGU	2367	19191	HBV-313 Rz-6 amino stabl	a <sub>8</sub> c <sub>8</sub> s <sub>8</sub> u <sub>8</sub> g <sub>8</sub> c <sub>8</sub> g cUGAUgagccgcuuagggccGaa Auuuug B	10951
395	GCGGUU U UAUCAU	2368	19195	HBV-395 Rz-6 amino stabl	a <sub>8</sub> u <sub>8</sub> g <sub>8</sub> a <sub>8</sub> ua cUGAUgagccgcuuagggccGaa Aacgcc B	10952
402	UAUCAU C UUCUCU	2369	19196	HBV-402 Rz-6 amino stabl	g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> aa cUGAUgagccgcuuagggccGaa Augaua B	10953
607	UGUAUU C CCAUCC	2370	19200	HBV-607 Rz-6 amino stabl	g <sub>8</sub> g <sub>8</sub> a <sub>8</sub> u <sub>8</sub> g <sub>8</sub> gg cUGAUgagccgcuuagggccGaa Aauaca B	10954
697	UUUGUU C AGUGGU	2371	19207	HBV-697 Rz-6 amino stabl	a <sub>8</sub> c <sub>8</sub> c <sub>8</sub> g <sub>8</sub> cu cUGAUgagccgcuuagggccGaa Aacaaa B	10955
1539	UCUCUU U AGCGCG	2372	19211	HBV-1539 Rz-6 amino stabl	C <sub>8</sub> c <sub>8</sub> g <sub>8</sub> c <sub>8</sub> gu cUGAUgagccgcuuagggccGaa Aagaga B	10956
1599	UCACCU C UGCACG	2373	19212	HBV-1599 Rz-6 amino stabl	C <sub>8</sub> g <sub>8</sub> u <sub>8</sub> g <sub>8</sub> ca cUGAUgagccgcuuagggccGaa Agguga B	10957
1607	GCACGU C GCAUGG	2374	19213	HBV-1607 Rz-6 amino stabl	C <sub>8</sub> c <sub>8</sub> a <sub>8</sub> u <sub>8</sub> g <sub>8</sub> gc cUGAUgagccgcuuagggccGaa Acgucg B	10958
1833	UCACCU C UGCCUA	2375	19216	HBV-1833 Rz-6 amino stabl	u <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> ca cUGAUgagccgcuuagggccGaa Agguga B	10959
2383	AGAAU C CCUCGC	2376	19219	HBV-2383 Rz-6 amino stabl	g <sub>8</sub> c <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g cUGAUgagccgcuuagggccGaa Aguuu B	10960
2429	GAAGAU C UCAAUC	2377	19221	HBV-2429 Rz-6 amino stabl	g <sub>8</sub> a <sub>8</sub> u <sub>8</sub> u <sub>8</sub> gga cUGAUgagccgcuuagggccGaa Aucuu B	10961
2831	UAUUCU U GGAAC	2378	19224	HBV-2831 Rz-6 amino stabl	g <sub>8</sub> u <sub>8</sub> u <sub>8</sub> c <sub>8</sub> cc cUGAUgagccgcuuagggccGaa Agaaua B	10962
430	UGCCUC A UCUCU	2379	19236	HBV-430 CHz-6 amino stabl	a <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> ga cUGAUgagccgcuuagggccGaa Iaggca B	10963
676	UGGUCU A GUUUAC	2380	19241	HBV-676 CHz-6 amino stabl	g <sub>8</sub> u <sub>8</sub> a <sub>8</sub> g <sub>8</sub> ac cUGAUgagccgcuuagggccGaa Iagcca B	10964
683	GUUAC U AGUGCC	2381	19242	HBV-683 CHz-6 amino stabl	g <sub>8</sub> g <sub>8</sub> c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> cu cUGAUgagccgcuuagggccGaa Iuaaac B	10965

1150	UUUACC C CGUUGC	2382	19247	HBV-1150 CHz-6 amino stabl	G <sub>S</sub> C <sub>S</sub> a <sub>S</sub> a <sub>S</sub> Cg	CUGAU/GagcccgguaggccGaa	Iguaaa B	10966
1200	GCAACC C CCACUG	2383	19248	HBV-1200 CHz-6 amino stabl	C <sub>S</sub> a <sub>S</sub> g <sub>S</sub> u <sub>S</sub> g	CUGAU/GagcccgguaggccGaa	Iguugc B	10967
1201	CAACCC C CACUGG	2384	19249	HBV-1201 CHz-6 amino stabl	C <sub>S</sub> C <sub>S</sub> a <sub>S</sub> g <sub>S</sub> ug	CUGAU/GagcccgguaggccGaa	Iggugg B	10968
1444	CGGCGC U GAUCC	2385	19250	HBV-1444 CHz-6 amino stabl	G <sub>S</sub> g <sub>S</sub> a <sub>S</sub> u <sub>S</sub> uc	CUGAU/GagcccgguaggccGaa	Icgccg B	10969
1451	GAUCC C GCGGAC	2386	19251	HBV-1451 CHz-6 amino stabl	G <sub>S</sub> u <sub>S</sub> C <sub>S</sub> C <sub>S</sub> gC	CUGAU/GagcccgguaggccGaa	Igaunc B	10970
1533	CGCACC U CUUUU	2387	19252	HBV-1533 CHz-6 amino stabl	a <sub>S</sub> a <sub>S</sub> a <sub>S</sub> g <sub>S</sub> g	CUGAU/GagcccgguaggccGaa	Iguugc B	10971
1600	CACCUC U GCAGU	2388	19255	HBV-1600 CHz-6 amino stabl	a <sub>S</sub> C <sub>S</sub> g <sub>S</sub> u <sub>S</sub> gC	CUGAU/GagcccgguaggccGaa	Iagguu B	10972
1698	CCGACC U UGAGGC	2389	19256	HBV-1698 CHz-6 amino stabl	G <sub>S</sub> C <sub>S</sub> C <sub>S</sub> u <sub>S</sub> ca	CUGAU/GagcccgguaggccGaa	Igucgg B	10973
1784	GGAGGC U GUAGGC	2390	19257	HBV-1784 CHz-6 amino stabl	G <sub>S</sub> C <sub>S</sub> C <sub>S</sub> u <sub>S</sub> ac	CUGAU/GagcccgguaggccGaa	Iccucc B	10974
1829	UUUUUC A CCUCUG	2391	19259	HBV-1829 CHz-6 amino stabl	C <sub>S</sub> a <sub>S</sub> g <sub>S</sub> a <sub>S</sub> g	CUGAU/GagcccgguaggccGaa	Iaaaaa B	10975
1876	GCCUCC A AGCUGU	2392	19265	HBV-1876 CHz-6 amino stabl	a <sub>S</sub> C <sub>S</sub> a <sub>S</sub> g <sub>S</sub> cu	CUGAU/GagcccgguaggccGaa	Igagcc B	10976
1880	CCAAGC U GUGCCU	2393	19267	HBV-1880 CHz-6 amino stabl	a <sub>S</sub> g <sub>S</sub> g <sub>S</sub> C <sub>S</sub> ac	CUGAU/GagcccgguaggccGaa	Icuugg B	10977
218	UUUUUC U GUUGACA	2394	19178	HBV-218 Rz-7 amino stabl	u <sub>S</sub> g <sub>S</sub> u <sub>S</sub> C <sub>S</sub> aac	CUGAU/GagcccgguaggccGaa	Agaaaa B	10978
257	CUAGACU C GUGGUGG	2395	19181	HBV-257 Rz-7 amino stabl	C <sub>S</sub> C <sub>S</sub> a <sub>S</sub> C <sub>S</sub> ac	CUGAU/GagcccgguaggccGaa	Agucua B	10979
268	GUGGACU U CUCUCA	2396	19183	HBV-268 Rz-7 amino stabl	u <sub>S</sub> u <sub>S</sub> g <sub>S</sub> a <sub>S</sub> g	CUGAU/GagcccgguaggccGaa	Aguccac B	10980
269	UGGACUU C UCUCAU	2397	19184	HBV-269 Rz-7 amino stabl	a <sub>S</sub> u <sub>S</sub> u <sub>S</sub> g <sub>S</sub> aga	CUGAU/GagcccgguaggccGaa	Aagucca B	10981
271	GACUUU C UCAUUU	2398	19185	HBV-271 Rz-7 amino stabl	a <sub>S</sub> a <sub>S</sub> a <sub>S</sub> u <sub>S</sub> ga	CUGAU/GagcccgguaggccGaa	Agaaguc B	10982
273	CUUCUCU C AAUUUUC	2399	19186	HBV-273 Rz-7 amino stabl	g <sub>S</sub> a <sub>S</sub> a <sub>S</sub> a <sub>S</sub> uu	CUGAU/GagcccgguaggccGaa	Agagaag B	10983
277	UCUCAU U UUCUAGG	2400	19187	HBV-277 Rz-7 amino stabl	C <sub>S</sub> C <sub>S</sub> u <sub>S</sub> a <sub>S</sub> gaa	CUGAU/GagcccgguaggccGaa	Auugaga B	10984
278	CUCAUU U UCUAGGG	2401	19188	HBV-278 Rz-7 amino stabl	C <sub>S</sub> C <sub>S</sub> C <sub>S</sub> u <sub>S</sub> aga	CUGAU/GagcccgguaggccGaa	Aauugag B	10985
279	UCAUUU U CUAGGGG	2402	19189	HBV-279 Rz-7 amino stabl	C <sub>S</sub> C <sub>S</sub> C <sub>S</sub> u <sub>S</sub> ag	CUGAU/GagcccgguaggccGaa	Aaaunga B	10986
314	CAAAUU C GCAGUCC	2403	19192	HBV-314 Rz-7 amino stabl	G <sub>S</sub> g <sub>S</sub> a <sub>S</sub> C <sub>S</sub> ugc	CUGAU/GagcccgguaggccGaa	Aauuug B	10987
385	GAUGUGU C UGCGCG	2404	19193	HBV-385 Rz-7 amino stabl	C <sub>S</sub> g <sub>S</sub> C <sub>S</sub> C <sub>S</sub> gca	CUGAU/GagcccgguaggccGaa	Acacauc B	10988
394	GCGGCGU U UUAUCAU	2405	19194	HBV-394 Rz-7 amino stabl	a <sub>S</sub> u <sub>S</sub> g <sub>S</sub> a <sub>S</sub> uaa	CUGAU/GagcccgguaggccGaa	Acgccgc B	10989
402	UUAUCAU C UUCUCUCU	2406	19197	HBV-402 Rz-7 amino stabl	a <sub>S</sub> g <sub>S</sub> a <sub>S</sub> g <sub>S</sub> gaa	CUGAU/GagcccgguaggccGaa	Augauaa B	10990
423	UGCUGCU A UGCUUCA	2407	19198	HBV-423 Rz-7 amino stabl	u <sub>S</sub> g <sub>S</sub> a <sub>S</sub> g <sub>S</sub> gca	CUGAU/GagcccgguaggccGaa	Agcagca B	10991
429	UAUGCCU C AUCUUUCU	2408	19199	HBV-429 Rz-7 amino stabl	a <sub>S</sub> g <sub>S</sub> a <sub>S</sub> a <sub>S</sub> gau	CUGAU/GagcccgguaggccGaa	Aggcaua B	10992
679	GCUCAGU U UACUAGU	2409	19201	HBV-679 Rz-7 amino stabl	a <sub>S</sub> C <sub>S</sub> u <sub>S</sub> a <sub>S</sub> gua	CUGAU/GagcccgguaggccGaa	Acugagc B	10993
680	CUCAGUU U ACUAGUG	2410	19202	HBV-680 Rz-7 amino stabl	C <sub>S</sub> a <sub>S</sub> C <sub>S</sub> u <sub>S</sub> agu	CUGAU/GagcccgguaggccGaa	Aacugag B	10994
681	UCAGUUU A CUAGUGC	2411	19203	HBV-681 Rz-7 amino stabl	G <sub>S</sub> C <sub>S</sub> a <sub>S</sub> C <sub>S</sub> uag	CUGAU/GagcccgguaggccGaa	Aaacuga B	10995
684	GUUUACU A GUGCCAU	2412	19204	HBV-684 Rz-7 amino stabl	a <sub>S</sub> u <sub>S</sub> g <sub>S</sub> g <sub>S</sub> cac	CUGAU/GagcccgguaggccGaa	Aguaaac B	10996
692	GUGCCAU U UGUUCAG	2413	19205	HBV-692 Rz-7 amino stabl	C <sub>S</sub> u <sub>S</sub> g <sub>S</sub> a <sub>S</sub> aca	CUGAU/GagcccgguaggccGaa	Auggcac B	10997
693	UGCCAUU U GUUCAGU	2414	19206	HBV-693 Rz-7 amino stabl	a <sub>S</sub> C <sub>S</sub> u <sub>S</sub> g <sub>S</sub> aac	CUGAU/GagcccgguaggccGaa	Aauggca B	10998
1534	CGCACCU C UCUUUAC	2415	19208	HBV-1534 Rz-7 amino stabl	G <sub>S</sub> u <sub>S</sub> a <sub>S</sub> a <sub>S</sub> aga	CUGAU/GagcccgguaggccGaa	Agguugc B	10999

1536	CACCUCU C UUUACGC	2416	19209	HBV-1536 Rz-7 amino stabl	G <sub>8</sub> C <sub>8</sub> G <sub>8</sub> U <sub>8</sub> aaa cUGAUGagggccguuagggccGaa Agaggug B	11000
1538	CCUCUCU U UACGCGG	2352	19210	HBV-1538 Rz-7 amino stabl	C <sub>8</sub> C <sub>8</sub> G <sub>8</sub> C <sub>8</sub> gua cUGAUGagggccguuagggccGaa Agaggug B	11001
1787	AGGCGU A GGCAUAA	2417	19214	HBV-1787 Rz-7 amino stabl	U <sub>8</sub> U <sub>8</sub> A <sub>8</sub> U <sub>8</sub> ggcc cUGAUGagggccguuagggccGaa Acagccu B	11002
1793	UAGGCAU A AAUUGGU	2418	19215	HBV-1793 Rz-7 amino stabl	A <sub>8</sub> C <sub>8</sub> C <sub>8</sub> A <sub>8</sub> auu cUGAUGagggccguuagggccGaa Augccua B	11003
1874	CAAGCCU C CAAGCUG	2419	19217	HBV-1874 Rz-7 amino stabl	C <sub>8</sub> A <sub>8</sub> G <sub>8</sub> C <sub>8</sub> uug cUGAUGagggccguuagggccGaa Aggcuug B	11004
1887	UGUGCCU U GGGUGGC	2420	19218	HBV-1887 Rz-7 amino stabl	G <sub>8</sub> C <sub>8</sub> C <sub>8</sub> G <sub>8</sub> ccc cUGAUGagggccguuagggccGaa Aggcaaa B	11005
2383	AAGAACU C CCUGGCC	2421	19220	HBV-2383 Rz-7 amino stabl	G <sub>8</sub> G <sub>8</sub> C <sub>8</sub> G <sub>8</sub> agg cUGAUGagggccguuagggccGaa Aguuuuu B	11006
2828	ACCAUAV U CUGGGGA	2422	19222	HBV-2828 Rz-7 amino stabl	U <sub>8</sub> C <sub>8</sub> C <sub>8</sub> G <sub>8</sub> aag cUGAUGagggccguuagggccGaa Anauggu B	11007
2829	CCAUAUU C UUGGGAA	2423	19223	HBV-2829 Rz-7 amino stabl	U <sub>8</sub> U <sub>8</sub> C <sub>8</sub> C <sub>8</sub> caa cUGAUGagggccguuagggccGaa Anaugg B	11008
2831	AUAUUU C GGAACA	2424	19225	HBV-2831 Rz-7 amino stabl	U <sub>8</sub> G <sub>8</sub> U <sub>8</sub> U <sub>8</sub> ccc cUGAUGagggccguuagggccGaa Agaauu B	11009
256	UCUAGAC U CGUGGUG	2425	19226	HBV-256 CHz-7 amino stabl	C <sub>8</sub> A <sub>8</sub> C <sub>8</sub> C <sub>8</sub> acg cUGAUGagggccguuagggccGaa Iucuaga B	11010
267	GGUGGAC U UCUCUCA	2426	19227	HBV-267 CHz-7 amino stabl	U <sub>8</sub> G <sub>8</sub> A <sub>8</sub> G <sub>8</sub> aga cUGAUGagggccguuagggccGaa Iuccacc B	11011
270	GGACUUC U CUCAAUU	2427	19228	HBV-270 CHz-7 amino stabl	A <sub>8</sub> A <sub>8</sub> U <sub>8</sub> U <sub>8</sub> ggag cUGAUGagggccguuagggccGaa Iaaqucc B	11012
272	ACUUCUC U CAAUUUU	2428	19229	HBV-272 CHz-7 amino stabl	A <sub>8</sub> A <sub>8</sub> C <sub>8</sub> A <sub>8</sub> suug cUGAUGagggccguuagggccGaa Iagaagu B	11013
274	UUCUCUC A AUUUUCU	2429	19230	HBV-274 CHz-7 amino stabl	A <sub>8</sub> G <sub>8</sub> A <sub>8</sub> A <sub>8</sub> auu cUGAUGagggccguuagggccGaa Iagagaa B	11014
386	AUGUGUC U GCGGGGU	2430	19231	HBV-386 CHz-7 amino stabl	A <sub>8</sub> C <sub>8</sub> G <sub>8</sub> C <sub>8</sub> cg cUGAUGagggccguuagggccGaa Iacacau B	11015
419	AUCCUGC U GCUAUGC	2431	19232	HBV-419 CHz-7 amino stabl	G <sub>8</sub> C <sub>8</sub> A <sub>8</sub> U <sub>8</sub> agc cUGAUGagggccguuagggccGaa Icaggau B	11016
422	CUGGUGC U AUGCCUC	2432	19233	HBV-422 CHz-7 amino stabl	G <sub>8</sub> A <sub>8</sub> G <sub>8</sub> G <sub>8</sub> cau cUGAUGagggccguuagggccGaa Icacag B	11017
427	GUUAUGC C UCAUCUU	2433	19234	HBV-427 CHz-7 amino stabl	A <sub>8</sub> A <sub>8</sub> G <sub>8</sub> A <sub>8</sub> uga cUGAUGagggccguuagggccGaa Icauagc B	11018
428	CUAUGCC U CAUCUUC	2434	19235	HBV-428 CHz-7 amino stabl	G <sub>8</sub> A <sub>8</sub> A <sub>8</sub> G <sub>8</sub> aug cUGAUGagggccguuagggccGaa Igcauag B	11019
430	AUGCCUC A UCUCUUU	2435	19237	HBV-430 CHz-7 amino stabl	A <sub>8</sub> A <sub>8</sub> G <sub>8</sub> A <sub>8</sub> aga cUGAUGagggccguuagggccGaa Iaggcau B	11020
608	UGUAUUC C CAUCCCA	2436	19238	HBV-608 CHz-7 amino stabl	U <sub>8</sub> G <sub>8</sub> G <sub>8</sub> G <sub>8</sub> aug cUGAUGagggccguuagggccGaa Iaaauca B	11021
609	GUUAUUC C AUCCCAU	2437	19239	HBV-609 CHz-7 amino stabl	A <sub>8</sub> U <sub>8</sub> G <sub>8</sub> G <sub>8</sub> gau cUGAUGagggccguuagggccGaa Igaauac B	11022
669	GUUUCUC U UGGUCUA	2438	19240	HBV-669 CHz-7 amino stabl	U <sub>8</sub> G <sub>8</sub> A <sub>8</sub> G <sub>8</sub> cca cUGAUGagggccguuagggccGaa Iagaaac B	11023
689	CUAGUGC C AUUGUUU	2439	19243	HBV-689 CHz-7 amino stabl	A <sub>8</sub> A <sub>8</sub> C <sub>8</sub> A <sub>8</sub> auu cUGAUGagggccguuagggccGaa Icacuag B	11024
690	UAGUGCC A UUUGUUC	2440	19244	HBV-690 CHz-7 amino stabl	G <sub>8</sub> A <sub>8</sub> A <sub>8</sub> C <sub>8</sub> aaa cUGAUGagggccguuagggccGaa Igcacua B	11025
718	GUUUUCC C CCACUGU	2441	19245	HBV-718 CHz-7 amino stabl	A <sub>8</sub> C <sub>8</sub> A <sub>8</sub> G <sub>8</sub> ugg cUGAUGagggccguuagggccGaa Igaagc B	11026
1149	CCUUUAC C CCGUUGC	2442	19246	HBV-1149 CHz-7 amino stabl	G <sub>8</sub> C <sub>8</sub> A <sub>8</sub> A <sub>8</sub> cgg cUGAUGagggccguuagggccGaa Iuaaagg B	11027
1535	GCACCUC U CUUUAAG	2443	19253	HBV-1535 CHz-7 amino stabl	C <sub>8</sub> G <sub>8</sub> U <sub>8</sub> A <sub>8</sub> agg cUGAUGagggccguuagggccGaa Iaggugc B	11028
1537	ACUCUC U UUAGGCG	2444	19254	HBV-1537 CHz-7 amino stabl	C <sub>8</sub> G <sub>8</sub> C <sub>8</sub> G <sub>8</sub> uaa cUGAUGagggccguuagggccGaa Iagaggu B	11029
1791	UGUAGGC A UAAAUUG	2445	19258	HBV-1791 CHz-7 amino stabl	C <sub>8</sub> A <sub>8</sub> A <sub>8</sub> U <sub>8</sub> uaa cUGAUGagggccguuagggccGaa Iccuaca B	11030
1831	UUUUCAC C UCUGCCU	2446	19260	HBV-1831 CHz-7 amino stabl	A <sub>8</sub> G <sub>8</sub> G <sub>8</sub> C <sub>8</sub> aga cUGAUGagggccguuagggccGaa Iugaaaa B	11031
1832	UUUCACC U CUGCCUA	2447	19261	HBV-1832 CHz-7 amino stabl	U <sub>8</sub> A <sub>8</sub> G <sub>8</sub> G <sub>8</sub> cag cUGAUGagggccguuagggccGaa Igugaaa B	11032
1872	UUCAAGC C UCCAAGC	2448	19262	HBV-1872 CHz-7 amino stabl	G <sub>8</sub> C <sub>8</sub> U <sub>8</sub> U <sub>8</sub> sgga cUGAUGagggccguuagggccGaa Icuugaa B	11033

218

219

2420	CCGCGUC G CAGAAGA	2499	20123	HBV-2420 Zin.Rz-7 stab2	amino	u <sub>g</sub> c <sub>s</sub> u <sub>g</sub> <sup>u</sup> gcu <sub>g</sub> GccgaaagGCCGaGugaGGuCu gacgcg <sub>g</sub> B	11084
65	CCUGCUG G UGCUCC	2500	20124	HBV-65 Zin.Rz-7 stab2	amino	g <sub>g</sub> g <sub>g</sub> a <sub>g</sub> g <sub>g</sub> cca GccgaaagGCCGaGugaGGuCu cagcag <sub>g</sub> B	11085
192	ACCCCU G CUCGUG	2501	20125	HBV-192 Zin.Rz-6 stab2	amino	c <sub>g</sub> a <sub>g</sub> c <sub>g</sub> g <sub>g</sub> ag GccgaaagGCCGaGugaGGuCu agggg <sub>u</sub> B	11086
198	GCUCGU G UUACAG	2502	20126	HBV-198 Zin.Rz-6 stab2	amino	c <sub>g</sub> u <sub>g</sub> g <sub>g</sub> <sup>u</sup> gaa GccgaaagGCCGaGugaGGuCu acgagc <sub>g</sub> B	11087
258	UAGACUC G UGGUGGA	2503	20127	HBV-258 Zin.Rz-7 stab2	amino	u <sub>g</sub> c <sub>g</sub> c <sub>g</sub> a <sub>g</sub> cca GccgaaagGCCGaGugaGGuCu gagucua <sub>g</sub> B	11088
261	ACUCGUG G UGACUU	2504	20128	HBV-261 Zin.Rz-7 stab2	amino	a <sub>g</sub> a <sub>g</sub> g <sub>g</sub> <sup>u</sup> gcca GccgaaagGCCGaGugaGGuCu caccag <sub>u</sub> B	11089
315	AAAUUC G CAGUCC	2505	20129	HBV-315 Zin.Rz-6 stab2	amino	g <sub>g</sub> g <sub>g</sub> a <sub>g</sub> c <sub>g</sub> ug GccgaaagGCCGaGugaGGuCu gaauu <sub>u</sub> B	11090
381	CUGGAU G UGUCUG	2506	20130	HBV-381 Zin.Rz-6 stab2	amino	c <sub>g</sub> a <sub>g</sub> g <sub>g</sub> a <sub>g</sub> ca GccgaaagGCCGaGugaGGuCu auccag <sub>g</sub> B	11091
387	UGUGUCU G CGCGUU	2507	20131	HBV-387 Zin.Rz-7 stab2	amino	a <sub>g</sub> a <sub>g</sub> c <sub>g</sub> g <sub>g</sub> ccg GccgaaagGCCGaGugaGGuCu agacaca <sub>g</sub> B	11092
390	UCUGCG G CGUUUU	2508	20132	HBV-390 Zin.Rz-6 stab2	amino	a <sub>g</sub> a <sub>g</sub> a <sub>g</sub> a <sub>g</sub> c <sub>g</sub> GccgaaagGCCGaGugaGGuCu cgcaga <sub>g</sub> B	11093
417	CAUCCU G CUGCUA	2509	20133	HBV-417 Zin.Rz-6 stab2	amino	u <sub>g</sub> a <sub>g</sub> g <sub>g</sub> c <sub>g</sub> ag GccgaaagGCCGaGugaGGuCu aggaug <sub>g</sub> B	11094
420	CCUGCU G CUAUGC	2510	20134	HBV-420 Zin.Rz-6 stab2	amino	g <sub>g</sub> c <sub>g</sub> a <sub>g</sub> <sup>u</sup> g <sub>g</sub> ag GccgaaagGCCGaGugaGGuCu agcag <sub>g</sub> B	11095
468	UAUGUU G CCCGUU	2511	20135	HBV-468 Zin.Rz-6 stab2	amino	a <sub>g</sub> a <sub>g</sub> c <sub>g</sub> g <sub>g</sub> g <sub>g</sub> GccgaaagGCCGaGugaGGuCu aacaua <sub>g</sub> B	11096
476	CCGUUU G UCCUCU	2512	20136	HBV-476 Zin.Rz-6 stab2	amino	a <sub>g</sub> g <sub>g</sub> a <sub>g</sub> g <sub>g</sub> ga GccgaaagGCCGaGugaGGuCu aaacg <sub>g</sub> B	11097
677	GGCUCA G UUUACU	2513	20137	HBV-677 Zin.Rz-6 stab2	amino	a <sub>g</sub> g <sub>g</sub> u <sub>g</sub> a <sub>g</sub> aa GccgaaagGCCGaGugaGGuCu ugagcc <sub>g</sub> B	11098
677	UGGCUCA G UUUACUA	2514	20138	HBV-677 Zin.Rz-7 stab2	amino	u <sub>g</sub> a <sub>g</sub> g <sub>g</sub> <sup>u</sup> g <sub>g</sub> aaa GccgaaagGCCGaGugaGGuCu ugagcca <sub>g</sub> B	11099
685	UUACUA G UGCAU	2515	20139	HBV-685 Zin.Rz-6 stab2	amino	a <sub>g</sub> u <sub>g</sub> g <sub>g</sub> g <sub>g</sub> ca GccgaaagGCCGaGugaGGuCu uaguaa <sub>g</sub> B	11100
685	UUUACUA G UGCCAUU	2516	20140	HBV-685 Zin.Rz-7 stab2	amino	a <sub>g</sub> a <sub>g</sub> u <sub>g</sub> g <sub>g</sub> gca GccgaaagGCCGaGugaGGuCu uaguaaa <sub>g</sub> B	11101
687	UACUAGU G CCAUUUG	2517	20141	HBV-687 Zin.Rz-7 stab2	amino	c <sub>g</sub> a <sub>g</sub> a <sub>g</sub> a <sub>g</sub> g <sub>g</sub> ugg GccgaaagGCCGaGugaGGuCu acuagua <sub>g</sub> B	11102
699	UGUUCA G UGGUUC	2518	20142	HBV-699 Zin.Rz-6 stab2	amino	g <sub>g</sub> a <sub>g</sub> a <sub>g</sub> c <sub>g</sub> ca GccgaaagGCCGaGugaGGuCu ugaaca <sub>g</sub> B	11103
702	UCAGUG G UUCGUA	2519	20143	HBV-702 Zin.Rz-6 stab2	amino	u <sub>g</sub> a <sub>g</sub> c <sub>g</sub> g <sub>g</sub> aa GccgaaagGCCGaGugaGGuCu cacuga <sub>g</sub> B	11104
702	UUCAGUG G UUCGUAG	2520	20144	HBV-702 Zin.Rz-7 stab2	amino	c <sub>g</sub> u <sub>g</sub> a <sub>g</sub> c <sub>g</sub> gaa GccgaaagGCCGaGugaGGuCu cacugaa <sub>g</sub> B	11105

711	CGUAGG G CUUUC	2521	20145	HBV-711 Zin.Rz-6 stab2	gsgs <sup>u</sup> s <sup>u</sup> s <sup>u</sup> ag GccgaaagGCGaGugaGGuCu ccuacg B	11106
1006	UUGUGG G UCuuuu	2522	20146	HBV-1006 Zin.Rz-6 stab2	a <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> ga GccgaaagGCGaGugaGGuCu ccacaa B	11107
1103	UUUCUC G CCAACU	2523	20147	HBV-1103 Zin.Rz-6 stab2	a <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu gagaaa B	11108
1103	CUUUCUC G CCAACU	2524	20148	HBV-1103 Zin.Rz-7 stab2	a <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu gagaaa B	11109
1184	GCCAAGU G UUUGCUG	2525	20149	HBV-1184 Zin.Rz-7 stab2	c <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> c <sub>s</sub> aaa GccgaaagGCGaGugaGGuCu acuuaggc B	11110
1440	CGUCUG G CGCUGA	2526	20150	HBV-1440 Zin.Rz-6 stab2	u <sub>s</sub> c <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> g <sub>s</sub> c <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu cgacgg B	11111
1442	GUCGGC G CUGAAU	2527	20151	HBV-1442 Zin.Rz-6 stab2	a <sub>s</sub> u <sub>s</sub> <sup>u</sup> s <sup>u</sup> c <sub>s</sub> g <sub>s</sub> ag GccgaaagGCGaGugaGGuCu gccgac B	11112
1442	CGUCGGC G CUGAAUC	2528	20152	HBV-1442 Zin.Rz-7 stab2	g <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> u <sub>s</sub> cag GccgaaagGCGaGugaGGuCu gccgacg B	11113
1553	CUCCCC G UCUGUG	2529	20153	HBV-1553 Zin.Rz-6 stab2	c <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> c <sub>s</sub> a <sub>s</sub> ga GccgaaagGCGaGugaGGuCu ggggag B	11114
1557	CCGUCU G UGCCUU	2530	20154	HBV-1557 Zin.Rz-6 stab2	a <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> ca GccgaaagGCGaGugaGGuCu agacgg B	11115
1559	GUCUGU G CCUUCU	2531	20155	HBV-1559 Zin.Rz-6 stab2	a <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu acagac B	11116
1583	CCGUGU G CACUUC	2532	20156	HBV-1583 Zin.Rz-6 stab2	g <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu acacgg B	11117
1590	CACUUC G CUUCAC	2533	20157	HBV-1590 Zin.Rz-6 stab2	g <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> ag GccgaaagGCGaGugaGGuCu gaagug B	11118
1622	ACCACC G UGAACG	2534	20158	HBV-1622 Zin.Rz-6 stab2	c <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> u <sub>s</sub> ca GccgaaagGCGaGugaGGuCu gguggu B	11119
1870	UGUUCAA G CCUCCAA	2535	20159	HBV-1870 Zin.Rz-7 stab2	u <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> ag <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu uugaaca B	11120
1881	CCAAGCU G UGCCUUG	2536	20160	HBV-1881 Zin.Rz-7 stab2	c <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> ca GccgaaagGCGaGugaGGuCu agcuugg B	11121
1883	AGCUGU G CCUUGG	2537	20161	HBV-1883 Zin.Rz-6 stab2	c <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu acagcu B	11122
1883	AAGCUGU G CCUUGGG	2538	20162	HBV-1883 Zin.Rz-7 stab2	c <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> c <sub>s</sub> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu acagcuu B	11123
2311	CCAAAU G CCCCUA	2539	20163	HBV-2311 Zin.Rz-6 stab2	u <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> g <sub>s</sub> g <sub>s</sub> GccgaaagGCGaGugaGGuCu auuugg B	11124
2347	ACUGUU G UUAGAC	2540	20164	HBV-2347 Zin.Rz-6 stab2	g <sub>s</sub> <sup>u</sup> s <sup>u</sup> c <sub>s</sub> <sup>u</sup> s <sup>u</sup> aa GccgaaagGCGaGugaGGuCu aacagu B	11125
2364	AGGCAG G UCCCCU	2541	20165	HBV-2364 Zin.Rz-6 stab2	a <sub>s</sub> g <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> ga GccgaaagGCGaGugaGGuCu cugccu B	11126
2364	GAGCAG G UCCCCUA	2542	20166	HBV-2364 Zin.Rz-7 stab2	u <sub>s</sub> a <sub>s</sub> <sup>u</sup> s <sup>u</sup> g <sub>s</sub> g <sub>s</sub> g <sub>s</sub> ga GccgaaagGCGaGugaGGuCu cugccuc B	11127



2388	UCCUC G CCUCG	2543	20167	HBV-2388 Zin.Rz-6 amino stab2	9 <sub>5</sub> C <sub>9</sub> S <sub>5</sub> a <sub>5</sub> g <sub>5</sub> g <sub>5</sub> GcgaagGcGaGugaGGuCu gagga B	11128
2393	CGCCUC G CAGACG	2544	20168	HBV-2393 Zin.Rz-6 amino stab2	C <sub>5</sub> G <sub>5</sub> u <sub>5</sub> C <sub>5</sub> g <sub>5</sub> ug GcgaagGcGaGugaGGuCu gagcg B	11129
2417	CGCCGC G UCGCAG	2545	20169	HBV-2417 Zin.Rz-6 amino stab2	C <sub>5</sub> u <sub>5</sub> S <sub>5</sub> C <sub>5</sub> g <sub>5</sub> ga GcgaagGcGaGugaGGuCu gcggcg B	11130
2420	CGCGUC G CAGAAG	2546	20170	HBV-2420 Zin.Rz-6 amino stab2	C <sub>5</sub> u <sub>5</sub> u <sub>5</sub> C <sub>5</sub> g <sub>5</sub> ug GcgaagGcGaGugaGGuCu gacgag B	11131
2474	CAUAG G UGGAA	2547	20171	HBV-2474 Zin.Rz-6 amino stab2	u <sub>5</sub> u <sub>5</sub> C <sub>5</sub> C <sub>5</sub> ca GcgaagGcGaGugaGGuCu cuuau B	11132
381	GCUGAU G UGUCUG	2467	20172	HBV-381 Amb.Rz-7 stab2	G <sub>5</sub> C <sub>5</sub> a <sub>5</sub> G <sub>5</sub> a <sub>5</sub> ca gga L ucCCUUCaagga L ucCGG auccagc B	11133
648	UAUGGA G UGGCCU	2470	20173	HBV-648 Amb.Rz-7 stab2	a <sub>5</sub> G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> cca gga L ucCCUUCaagga L ucCGG ucccau B	11134
198	UGCUCU G UACAGG	2476	20174	HBV-198 Amb.Rz-7 stab2	C <sub>5</sub> C <sub>5</sub> u <sub>5</sub> G <sub>5</sub> uaa gga L ucCCUUCaagga L ucCGG acgagca B	11135
377	UAUCGU G GAUGUG	2548	20175	HBV-377 Amb.Rz-7 stab2	a <sub>5</sub> C <sub>5</sub> a <sub>5</sub> C <sub>5</sub> auc gga L ucCCUUCaagga L ucCGG agcgau B	11136
378	AUCGUG G AUGUGC	2549	20176	HBV-378 Amb.Rz-7 stab2	G <sub>5</sub> a <sub>5</sub> C <sub>5</sub> a <sub>5</sub> cau gga L ucCCUUCaagga L ucCGG cagcgau B	11137
383	UGGAUG G UCUGCG	2479	20177	HBV-383 Amb.Rz-7 stab2	C <sub>5</sub> C <sub>5</sub> G <sub>5</sub> C <sub>5</sub> aga gga L ucCCUUCaagga L ucCGG acaucca B	11138
648	GGAUGU G UCUGCG	2478	20178	HBV-383 Amb.Rz-6 stab2	C <sub>5</sub> G <sub>5</sub> C <sub>5</sub> g <sub>5</sub> ga gga L ucCCUUCaagga L ucCGG acaucc B	11139
650	AUGGA G UGGCC	2487	20179	HBV-648 Amb.Rz-6 stab2	G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> C <sub>5</sub> ca gga L ucCCUUCaagga L ucCGG ucccau B	11140
650	UGGAGU G GGCCUCA	2550	20180	HBV-650 Amb.Rz-7 stab2	u <sub>5</sub> G <sub>5</sub> a <sub>5</sub> G <sub>5</sub> gcc gga L ucCCUUCaagga L ucCGG acucca B	11141
650	GGGAGU G GGCCUC	2551	20181	HBV-650 Amb.Rz-6 stab2	G <sub>5</sub> a <sub>5</sub> G <sub>5</sub> g <sub>5</sub> gcc gga L ucCCUUCaagga L ucCGG acucc B	11142
694	GCCAUU G UUCAGUG	2488	20182	HBV-694 Amb.Rz-7 stab2	C <sub>5</sub> a <sub>5</sub> C <sub>5</sub> u <sub>5</sub> gaa gga L ucCCUUCaagga L ucCGG aauggc B	11143
699	UUGUUA G UGGUUCG	2489	20183	HBV-699 Amb.Rz-7 stab2	C <sub>5</sub> G <sub>5</sub> a <sub>5</sub> a <sub>5</sub> cca gga L ucCCUUCaagga L ucCGG ugaaca B	11144
701	GUUCAGU G GUUCGUA	2552	20184	HBV-701 Amb.Rz-7 stab2	u <sub>5</sub> a <sub>5</sub> C <sub>5</sub> G <sub>5</sub> aac gga L ucCCUUCaagga L ucCGG acugaac B	11145
710	UUCGUAG G GCUUUC	2553	20185	HBV-710 Amb.Rz-7 stab2	G <sub>5</sub> G <sub>5</sub> a <sub>5</sub> a <sub>5</sub> agc gga L ucCCUUCaagga L ucCGG cuacga B	11146
1525	CCACGG G GCGCAC	2554	20186	HBV-1525 Amb.Rz-6 stab2	G <sub>5</sub> u <sub>5</sub> G <sub>5</sub> C <sub>5</sub> gc gga L ucCCUUCaagga L ucCGG cggug B	11147
1624	CACCGU G AACGCC	2555	20187	HBV-1624 Amb.Rz-6 stab2	G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> G <sub>5</sub> uu gga L ucCCUUCaagga L ucCGG acggug B	11148
2069	CACUCA G GCAAGC	2556	20188	HBV-2069 Amb.Rz-6 stab2	G <sub>5</sub> C <sub>5</sub> u <sub>5</sub> g <sub>5</sub> g <sub>5</sub> cc gga L ucCCUUCaagga L ucCGG ugagug B	11149
2375	CCUAGAA G AAGAACU	2557	20189	HBV-2375 Amb.Rz-7 stab2	a <sub>5</sub> G <sub>5</sub> u <sub>5</sub> u <sub>5</sub> cuu gga L ucCCUUCaagga L ucCGG uuuaag B	11150
2476	AUAAGGU G GGAACU	2558	20190	HBV-2476 Amb.Rz-7 stab2	a <sub>5</sub> G <sub>5</sub> u <sub>5</sub> u <sub>5</sub> ucc gga L ucCCUUCaagga L ucCGG accuuu B	11151
65	CCUGCUG G UGGCUC	2500	20191	HBV-65 Amb.Rz-7 stab2	G <sub>5</sub> G <sub>5</sub> a <sub>5</sub> G <sub>5</sub> cca gga L ucCCUUCaagga L ucCGG cagcag B	11152
67	GCUGGU G GCUCCA	2559	20192	HBV-67 Amb.Rz-6 stab2	u <sub>5</sub> G <sub>5</sub> G <sub>5</sub> g <sub>5</sub> gc gga L ucCCUUCaagga L ucCGG accagc B	11153
198	GCUCGU G UUCACG	2502	20193	HBV-198 Amb.Rz-6 stab2	C <sub>5</sub> u <sub>5</sub> G <sub>5</sub> u <sub>5</sub> aa gga L ucCCUUCaagga L ucCGG acgagc B	11154
260	GACUCGU G GUGGACU	2560	20194	HBV-260 Amb.Rz-7 stab2	a <sub>5</sub> G <sub>5</sub> u <sub>5</sub> C <sub>5</sub> cac gga L ucCCUUCaagga L ucCGG acgaguc B	11155
263	UCGUGGU G GACUUCU	2561	20195	HBV-263 Amb.Rz-7 stab2	a <sub>5</sub> G <sub>5</sub> a <sub>5</sub> a <sub>5</sub> guc gga L ucCCUUCaagga L ucCGG accacga B	11156
377	AUCGCU G GAUGUG	2562	20196	HBV-377 Amb.Rz-6 stab2	C <sub>5</sub> a <sub>5</sub> C <sub>5</sub> g <sub>5</sub> uc gga L ucCCUUCaagga L ucCGG agcgau B	11157
378	UCGUGU G AUGUGU	2563	20197	HBV-378 Amb.Rz-6 stab2	a <sub>5</sub> C <sub>5</sub> a <sub>5</sub> C <sub>5</sub> au gga L ucCCUUCaagga L ucCGG cagcga B	11158

476	CCGUUU G UCCUCU	2512	20198	HBV-476 Amb.Rz-6 stab2	a <sub>9</sub> g <sub>8</sub> a <sub>9</sub> g <sub>8</sub> gga gga L ucCCUUUcaagga L ucCGGG aaacgg B	11159
651	GGGAGUG G GCCUCAG	2564	20199	HBV-651 Amb.Rz-7 stab2	c <sub>8</sub> u <sub>8</sub> g <sub>8</sub> a <sub>8</sub> ggc gga L ucCCUUUcaagga L ucCGGG cacucc B	11160
677	UGGCUCA G UUUACUA	2514	20200	HBV-677 Amb.Rz-7 stab2	u <sub>8</sub> a <sub>8</sub> g <sub>8</sub> u <sub>8</sub> aaa gga L ucCCUUUcaagga L ucCGGG ugagcca B	11161
685	UUUACUA G UGCCAUU	2516	20201	HBV-685 Amb.Rz-7 stab2	a <sub>8</sub> g <sub>8</sub> u <sub>8</sub> g <sub>8</sub> gca gga L ucCCUUUcaagga L ucCGGG uaguaaa B	11162
702	UUCAGUG G UUCGUAG	2520	20202	HBV-702 Amb.Rz-7 stab2	c <sub>8</sub> u <sub>8</sub> a <sub>8</sub> c <sub>8</sub> gaa gga L ucCCUUUcaagga L ucCGGG cacugaa B	11163
709	GUUCGUA G GGCUUUC	2565	20203	HBV-709 Amb.Rz-7 stab2	g <sub>8</sub> a <sub>8</sub> a <sub>8</sub> g <sub>8</sub> gcc gga L ucCCUUUcaagga L ucCGGG uacgaac B	11164
710	UCGUAG G GCUUUC	2566	20204	HBV-710 Amb.Rz-6 stab2	g <sub>8</sub> a <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> c gga L ucCCUUUcaagga L ucCGGG cuacga B	11165
747	UAUGGAU G AUGUGGU	2567	20205	HBV-747 Amb.Rz-7 stab2	a <sub>8</sub> g <sub>8</sub> c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> cau gga L ucCCUUUcaagga L ucCGGG auccaua B	11166
1557	CCGUCU G UGCCUU	2530	20206	HBV-1557 Amb.Rz-6 stab2	a <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> ca gga L ucCCUUUcaagga L ucCGGG agacgg B	11167
1881	CCAAGCU G UGCCUUG	2536	20207	HBV-1881 Amb.Rz-7 stab2	c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> g <sub>8</sub> gca gga L ucCCUUUcaagga L ucCGGG agcuugg B	11168
2347	ACUGUU G UUAGAC	2540	20208	HBV-2347 Amb.Rz-6 stab2	g <sub>8</sub> u <sub>8</sub> c <sub>8</sub> u <sub>8</sub> gaa gga L ucCCUUUcaagga L ucCGGG aacagu B	11169
2375	CUAGAA G AAGAAC	2568	20209	HBV-2375 Amb.Rz-6 stab2	g <sub>8</sub> u <sub>8</sub> g <sub>8</sub> g <sub>8</sub> uu gga L ucCCUUUcaagga L ucCGGG uucua B	11170
2378	GAAGAA G AACUCC	2569	20210	HBV-2378 Amb.Rz-6 stab2	g <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> uu gga L ucCCUUUcaagga L ucCGGG uucuu B	11171
2423	CGUCGCA G AAGAUUC	2570	20211	HBV-2423 Amb.Rz-7 stab2	a <sub>8</sub> g <sub>8</sub> a <sub>8</sub> u <sub>8</sub> cuu gga L ucCCUUUcaagga L ucCGGG ugcgacg B	11172
2426	GCAGAA G AUCUCA	2571	20212	HBV-2426 Amb.Rz-6 stab2	u <sub>8</sub> g <sub>8</sub> a <sub>8</sub> g <sub>8</sub> au gga L ucCCUUUcaagga L ucCGGG uucugc B	11173
2426	CGCAGAA G AUCUCA	2572	20213	HBV-2426 Amb.Rz-7 stab2	u <sub>8</sub> u <sub>8</sub> g <sub>8</sub> g <sub>8</sub> gau gga L ucCCUUUcaagga L ucCGGG uucugcg B	11174
2476	UAAGGU G GGAAC	2573	20214	HBV-2476 Amb.Rz-6 stab2	g <sub>8</sub> u <sub>8</sub> u <sub>8</sub> u <sub>8</sub> cc gga L ucCCUUUcaagga L ucCGGG accuua B	11175
2477	UAAGGUG G GAAACUU	2574	20215	HBV-2477 Amb.Rz-7 stab2	a <sub>8</sub> a <sub>8</sub> g <sub>8</sub> u <sub>8</sub> uuc gga L ucCCUUUcaagga L ucCGGG caccuua B	11176
2477	AAGGUG G GAAACU	2575	20216	HBV-2477 Amb.Rz-6 stab2	a <sub>8</sub> g <sub>8</sub> u <sub>8</sub> u <sub>8</sub> uc gga L ucCCUUUcaagga L ucCGGG caccuu B	11177
1607	UGCACGU C GCAUGGA	2576	20697	HBV-1607 Rz-7 allyl stab1 (7/4)	u <sub>8</sub> c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> g <sub>8</sub> ugc cUGAUgagccguuagccGaa Acgugca B	11178
1887	GUGCCU U GGGUGG	2577	20698	HBV-1887 Rz-6 allyl stab1 (6/4)	c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> c <sub>8</sub> cc cUGAUgagccguuagccGaa Aggcac B	11179
1607	GCACGU C GCAUGG	2374	20699	HBV-1607 Rz-6 allyl stab1 (6/3)	c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> u <sub>8</sub> g <sub>8</sub> c cUGAUgagccguuagccGaa Acgugc B	11180
1607	UGCACGU C GCAUGGA	2576	20700	HBV-1607 Rz-7 allyl stab1 (7/3)	u <sub>8</sub> c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> ugc cUGAUgagccguuagccGaa Acgugca B	11181
1887	GUGCCU U GGGUGG	2577	20701	HBV-1887 Rz-6 allyl stab1 (6/3)	c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> c <sub>8</sub> cc cUGAUgagccguuagccGaa Aggcac B	11182
1887	UGUGCCU U GGGUGGC	2420	20702	HBV-1887 Rz-7 allyl stab1 (7/3)	g <sub>8</sub> c <sub>8</sub> c <sub>8</sub> a <sub>8</sub> ccc cUGAUgagccguuagccGaa Aggcaca B	11183
313	CCAAAAU U CGCAGUC	2346	22798	HBV-313 Rz-7 Ome stab1	gacugcg CUGAUgagccguuagccGAA Anuungg B	11184
408	UCUUCCU C UGCAUCC	2349	22799	HBV-408 Rz-7 Ome stab1	ggaugca CUGAUgagccguuagccGAA Aggaaga B	11185
1756	AGGAGGU U AGGUUAA	2353	22800	HBV-1756 Rz-7 Ome stab1	uuuaccu CUGAUgagccguuagccGAA Accuccu B	11186
10	CUCCACC A CUUCCCA	2356	22770	HBV-10 CHz-7 Ome stab1	uggaag CUGAUgagccguuagccGAA Iguggag B	11187
335	UCCAGUC A CUCACCA	2357	22771	HBV-335 CHz-7 Ome stab1	ugguag CUGAUgagccguuagccGAA lacugga B	11188
273	CUUCUCU C AAUUUUC	2399	22645	HBV-273 Rz-7 allyl stab1 (7/3-GUUA)	g <sub>8</sub> a <sub>8</sub> a <sub>8</sub> a <sub>8</sub> uuu cUGAUgagccguuagccGaa Agagaag B	11189

273	CUUCUCU C AAUUUUC	2399	22646	HBV-273 Rz-7 allyl stabl (7/4-GUUA)	g <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccguuagggccGaa Agagaag B	11190
273	CUUCUCU C AAUUUUC	2399	22648	HBV-273 Rz-7 allyl stabl (7/3-GAAA)	g <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccgaaagggcGaa Agagaag B	11191
273	CUUCUCU C AAUUUUC	2578	22650	HBV-273 Rz-7 allyl stabl (7/4-GAAA)	g <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccgaaagggccGaa Agagaag B	11192
273	UUCUCU C AAUUUU	2578	22644	HBV-273 Rz-6 allyl stabl (6/3-GUUA)	a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccguuagggcGaa Agagaa B	11193
273	UUCUCU C AAUUUU	2578	22647	HBV-273 Rz-6 allyl stabl (6/3-GAAA)	a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccgaaagggcGaa Agagaa B	11194
273	UUCUCU C AAUUUU	2579	22649	HBV-273 Rz-6 allyl stabl (6/4-GAAA)	a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> uuu cUGAuGagccgaaagggcGaa Agagaa B	11195
350	ACCUGUU G UCCUCCA	2580	22714	HBV-350 GCL.Rz-7 Sribo stab3	uggagga uGAUg gcauGcacuaugc gCg aacaggu B	11196
1253	CCUUUGU G UCUCUCC	2581	22715	HBV-1253 GCL.Rz-7 Sribo stab3	gaggaga uGAUg gcauGcacuaugc gCg acaagg B	11197
1856	UGUUCAU G UCCUACU	2582	22716	HBV-1856 GCL.Rz-7 Sribo stab3	aguagga uGAUg gcauGcacuaugc gCg augaaca B	11198
1966	GCCUUCU G ACUUCUU	2583	22717	HBV-1966 GCL.Rz-7 Sribo stab3	aagaagu uGAUg gcauGcacuaugc gCg agaaggc B	11199
3132	UCCUCCU G CCUCCAC	2584	22718	HBV-3132 GCL.Rz-7 Sribo stab3	guggagg uGAUg gcauGcacuaugc gCg aggagga B	11200
332	AUCUCCA G UCACUCA	2579	22742	HBV-332 Zin.Rz-7 amino stab4	ugaguga gccgaaaggCgagugaGGuCu uggagau B	11201
350	ACCUGUU G UCCUCCA	2585	22743	HBV-350 Zin.Rz-7 amino stab4	uggagga gccgaaaggCgagugaGGuCu aacaggu B	11202
410	UUCUCU C CAUCCUG	2580	22744	HBV-410 Zin.Rz-7 amino stab4	caggau gcccgaaggCgagugaGGuCu agaggaa B	11203
1253	CCUUUGU G UCUCUCC	2586	22745	HBV-1253 Zin.Rz-7 amino stab4	gaggaga gccgaaaggCgagugaGGuCu acaagg B	11204
1754	GGAGGAG G UAGGUU	2587	22746	HBV-1754 Zin.Rz-7 amino stab4	aaccuaa gccgaaaggCgagugaGGuCu cuccucc B	11205
407	AUCUCC U CUGCAUC	2588	22772	HBV-407 CHZ-7 Ome stabl	gaugcag CUGAuGagccguuagggccGAA Igaagau B	11206
1848	UCAUCU A UGUUCAU	2589	22773	HBV-1848 CHZ-7 Ome stabl	augaaca CUGAuGagccguuagggccGAA Igauga B	11207
3124	GCAGCUC C UCCUCCU	2590	22774	HBV-3124 CHZ-7 Ome stabl	aggagga CUGAuGagccguuagggccGAA Iagucg B	11208
2165	GUCAGCU A UGUCAAC	2591	22801	HBV-2165 Rz-7 Ome stabl	guugaca CUGAuGagccguuagggccGAA Agcugac B	11209
2706	CCGUUUU A UCCAGAG	2579	22802	HBV-2706 Rz-7 Ome stabl	cucugga CUGAuGagccguuagggccGAA Aauacgg B	11210
350	ACCUGUU G UCCUCCA	2584	22966	HBV-350 Dz-7 stab3	uggagga GGCTAGCTACAACGA aacaggu B	11211
332	AUCUCCA G UCACUCA	2592	22967	HBV-332 Dz-7 stab3	ugaguga GGCTAGCTACAACGA uggagau B	11212
1840	CUGCCUA A UCAUCUC	2593	22968	HBV-1840 Dz-7 stab3	gagauga GGCTAGCTACAACGA uaggcag B	11213
358	UCCUCCA A UUUGUCC	2580	22969	HBV-358 Dz-7 stab3	ggacaaa GGCTAGCTACAACGA uggagga B	11214
1253	CCUUUGU G UCUCUCC	2346	22970	HBV-1253 Dz-7 stab3	gaggaga GGCTAGCTACAACGA acaagg B	11215
			20599	SAC	c <sub>5</sub> g <sub>5</sub> a <sub>5</sub> u <sub>5</sub> gu cUAGuGaccgaaagggGaa AagaggB	10834

UPPER CASE = RIBO  
UNDERLINE = DEOXY  
lower case = 2'-O-methyl  
I = inosine  
s = phosphorothioate linkage  
B = inverted deoxybasic residue  
U = 2'-deoxy-2'-C-allyl Uridine  
U = 2'-deoxy-2'-amino Uridine  
C = 2'-deoxy-2'-amino Cytidine

**Table XII: Group Designation and Dosage levels for HBV transgenic mouse study**

Group	Compound	Dose	Number of Mice	Duration of Treatment
1	RPI.18341 (site 273)	100 mg/kg/day*	10F	14 days
2	RPI.18371 (site 1833)	100 mg/kg/day*	10F	14 days
3	RPI.18418 (site 1873)	100 mg/kg/day*	10F	14 days
4	RPI.18372 (site 1874)	100 mg/kg/day*	10F	14 days
5	Saline control	100 mg/kg/day*	10F	14 days
6	Untreated		10F	0 days

\*administered via sc infusion using Alzet® mini-osmotic pumps

**TABLE XIII: GROUP DESIGNATION AND DOSAGE LEVELS FOR HBV TRANSGENIC MOUSE STUDY**

Group	Compound	Dose	Number of Mice	Duration of Treatment
1	RPI.18341 (site 273)	100 mg/kg/day*	15 (M or F)	14 days
2	RPI.18341 (site 273)	30 mg/kg/day*	15 (M or F)	14 days
3	RPI.18341 (site 273)	10 mg/kg/day*	15 (M or F)	14 days
4	RPI.18371 site 1833	100 mg/kg/day*	15 (M or F)	14 days
5	RPI.18371 site 1833	30 mg/kg/day*	15 (M or F)	14 days
6	RPI.18371 site 1833	10 mg/kg/day*	15 (M or F)	14 days
7	SAC (RPI.20599)	100 mg/kg/day*	15 (M or F)	14 days
8	SAC (RPI.20599)	30 mg/kg/day*	15 (M or F)	14 days
9	SAC (RPI.20599)	10 mg/kg/day*	15 (M or F)	14 days
10	Saline control	12 µl/day*	15 (M or F)	14 days
11	3TC® control	50 mg/kg/day, PO	15 (M or F)	14 days

\*administered via sc infusion using Alzet® mini-osmotic pumps

Table XIV: HBV RT primer Decoy sequences

Length	Decoy Sequence	Seq ID No.
4	AUUC	11216
4	CAUU	11217
4	UCAU	11218
4	UUCA	11219
5	AUUCA	11220
5	CAUUC	11221
5	UCAUU	11222
5	UUCAU	11223
6	AUUCAU	11224
6	CAUUCA	11225
6	UCAUUC	11226
6	UUCAUU	11227
7	AUUCAUU	11228
7	CAUUCAU	11229
7	UCAUUCA	11230
7	UUCAUUC	11231
8	AUUCAUUC	11232
8	CAUUCAUU	11233
8	UCAUUCAU	11234
8	UUCAUUCA	11235
9	AUUCAUUCA	11236
9	CAUUCAUUC	11237
9	UCAUUCAUU	11238
9	UUCAUUCAU	11239
10	AUUCAUUCAU	11240
10	CAUUCAUUCA	11241
10	UCAUUCAUUC	11242
10	UUCAUUCAUU	11243
11	AUUCAUUCAUU	11244
11	CAUUCAUUCAU	11245
11	UCAUUCAUUCA	11246
11	UUCAUUCAUUC	11247
12	AUUCAUUCAUUC	11248
12	CAUUCAUUCAUU	11249
12	UCAUUCAUUCAU	11250
12	UUCAUUCAUUCA	11251
13	AUUCAUUCAUUCA	11252
13	CAUUCAUUCAUUC	11253
13	UCAUUCAUUCAUU	11254
13	UUCAUUCAUUCAU	11255
14	AUUCAUUCAUUCAU	11256
14	CAUUCAUUCAUUCA	11257
14	UCAUUCAUUCAUUC	11258
14	UUCAUUCAUUCAUU	11259
15	AUUCAUUCAUUCAUU	11260
15	CAUUCAUUCAUUCAU	11261

15	UCAUUCAUUCAUUC	11262
15	UUCAUUCAUUCAUUC	11263
16	AUUCAUUCAUUCAUUC	11264
16	CAUUCAUUCAUUCAUUC	11265
16	UCAUUCAUUCAUUCAU	11266
16	UUCAUUCAUUCAUUCA	11267
17	AUUCAUUCAUUCAUUCA	11268
17	CAUUCAUUCAUUCAUUC	11269
17	UCAUUCAUUCAUUCAUUC	11270
17	UUCAUUCAUUCAUUCAU	11271
18	AUUCAUUCAUUCAUUCAU	11272
18	CAUUCAUUCAUUCAUUCA	11273
18	UCAUUCAUUCAUUCAUUC	11274
18	UUCAUUCAUUCAUUCAUUC	11275
19	AUUCAUUCAUUCAUUCAUUC	11276
19	CAUUCAUUCAUUCAUUCAU	11277
19	UCAUUCAUUCAUUCAUUCA	11278
19	UUCAUUCAUUCAUUCAUUC	11279
20	AUUCAUUCAUUCAUUCAUUC	11280
20	CAUUCAUUCAUUCAUUCAUUC	11281
20	UCAUUCAUUCAUUCAUUCAU	11282
20	UUCAUUCAUUCAUUCAUUCA	11283
21	AUUCAUUCAUUCAUUCAUUCA	11284
21	CAUUCAUUCAUUCAUUCAUUC	11285
21	UCAUUCAUUCAUUCAUUCAUUC	11286
21	UUCAUUCAUUCAUUCAUUCAU	11287
22	CAUUCAUUCAUUCAUUCAUUCA	11288
22	UCAUUCAUUCAUUCAUUCAUUC	11289
22	UUCAUUCAUUCAUUCAUUCAUUC	11290
23	UCAUUCAUUCAUUCAUUCAUUCA	11291
23	UUCAUUCAUUCAUUCAUUCAUUC	11292
24	UCAUUCAUUCAUUCAUUCAUUCA	11293



Table XV: Synthetic Nucleic acid molecules

RPI#	Alias	Sequence	SeqID
24961	HBV DR1 2'Oallyl P=S	g <sub>s</sub> c <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11294
24997	HBV DR1 2'Oallyl P=S control	a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> g <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> c <sub>s</sub> g <sub>s</sub> B	11295
24956	HBV 1866-1869 1x 2'Oallyl P=S	u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> B	11296
24992	HBV 1866-1869 1x 2'Oallyl P=S control	a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11297
24941	HBV 1866-1869 2x 2'Oallyl P=S	u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> B	11298
24959	HBV 1866-1869 2x 2'Oallyl P=S control	a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11299
24944	HBV 1866-1869 3x 2'Oallyl P=S	u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> B	11300
24962	HBV 1866-1869 3x 2'Oallyl P=S control	a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11301
24945	HBV 1866-1869 4x 2'Oallyl P=S	u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> B	11302
24963	HBV 1866-1869 4x 2'Oallyl P=S control	a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11303
24938	HBV 1866-1869 2'Oallyl P=S	u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11304
24974	HBV 1866-1869 2'Oallyl P=S control	a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> B	11305
24940	HBV 1866-1872 2'Oallyl P=S	g <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11306
24958	HBV 1866-1872 2'Oallyl P=S control	a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> g <sub>s</sub> B	11307
24943	HBV 1866-1876 2'Oallyl P=S	g <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11308
24979	HBV 1866-1876 2'Oallyl P=S control	a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> g <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> B	11309
18341	HBV-273 UH.Rz-7 allyl stab1	g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> a <sub>s</sub> auu cUGAuGaggccguuaggccGaa Agagaag B	10887
24588	HBV-273 UH.Rz-7 allyl stab1 inact3 scram1 (GUUA SAC)	a <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> agg cUAGuGacgccguuaggcgGaa Aaaugaa B	11310
24929	HBV 1866-1969 2'Omethyl	ugaaB	11311
24965	HBV 1866-1969 2'Omethyl control	aaguB	11312
24934	HBV 1866-1876 2'Omethyl	ggaggcuugaaB	11313
24970	HBV 1866-1876 2'Omethyl control	aaguucggaggB	11314
24976	HBV 1866-1872 2'Omethyl	gcuugaaB	11315
24949	HBV 1866-1872 2'Omethyl control	aaguucgB	11316
24952	HBV DR1 2'Omethyl	gcagaggugaaB	11317
24988	HBV DR1 2'Omethyl control	aaguggagacgB	11318
24947	HBV 1866-1869 1x 2'Omethyl	uucab	11319
24983	HBV 1866-1869 1x 2'Omethyl control	acuuB	11320
24986	HBV 1866-1869 2x 2'Omethyl	uucauucab	11321
24950	HBV 1866-1869 2x 2'Omethyl control	acuuacuuB	11322

24989	HBV 1866-1869 3x 2'Omethyl	uucauucauucaB	11323
24953	HBV 1866-1869 3x 2'Omethyl control	acuuacuacuuB	11324
24936	HBV 1866-1869 4x 2'Omethyl	uucauucauucauucaB	11325
24954	HBV 1866-1869 4x 2'Omethyl control	acuuacuacuuacuB	11326
25639	HBV 5' EnI pos OMe P=S	B u <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u B	11327
25640	HBV 5' EnI neg OMe P=S	B a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11328
25641	HBV 5' EnI sc OMe P=S	B a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> B	11329
25642	HBV 3' EnI pos OMe P=S	B u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> c <sub>s</sub> B	11330
25643	HBV 3' EnI neg OMe P=S	B g <sub>s</sub> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> B	11331
25644	HBV 3' EnI pos sc OMe P=S	B a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> u <sub>s</sub> c <sub>s</sub> g <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11332
25645	HBV 5' EnI neg sc OMe P=S	B u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> a <sub>s</sub> g <sub>s</sub> c <sub>s</sub> g <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11333
25646	HBV DR1 pos OMe P=S	B u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> g <sub>s</sub> c B	11334
25651	HBV 5' EnI pos Oallyl P=S	B u <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u B	11335
25652	HBV 5' EnI neg Oallyl P=S	B a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11336
25653	HBV 5' EnI sc Oallyl P=S	B a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> B	11337
25654	HBV 3' EnI pos Oallyl P=S	B u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> c <sub>s</sub> B	11338
25655	HBV 3' EnI neg Oallyl P=S	B g <sub>s</sub> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> g <sub>s</sub> u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> B	11339
25656	HBV 3' EnI pos sc Oallyl P=S	B a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> u <sub>s</sub> c <sub>s</sub> g <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> a <sub>s</sub> a <sub>s</sub> B	11340
25657	HBV 5' EnI neg sc Oallyl P=S	B u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> a <sub>s</sub> g <sub>s</sub> c <sub>s</sub> g <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> u <sub>s</sub> B	11341
25658	HBV DR1 pos Oallyl P=S	B u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> a <sub>s</sub> c <sub>s</sub> c <sub>s</sub> u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> g <sub>s</sub> c B	11342

a, g, c, u = all 2'-O-allyl

a, g, c, u = 2'-O-methyl

U= 2'-C-allyl Uridine

S= phosphorothioate

B= inverted deoxyabasic

**Table XVI: Comparison of Tumor Weight to HBV DNA concentration in mice inoculated with HepG2.2.15 cells**

Time point (days)	HBV DNA copies/mL serum	Tumor weight (milligrams)
1	Below detection	No tumor
1	Below detection	No tumor
1	Below detection	No tumor
1	Below detection	No tumor
7	Below detection	No tumor
7	Below detection	No tumor
7	Below detection	No tumor
7	Below detection	No tumor
14	Below detection	No tumor
14	Below detection	No tumor
14	Below detection	No tumor
14	Below detection	No tumor
35	356	33
35	125083	167
35	578	No tumor
35	386	56
42	493	No tumor
42	114431	790
42	94025	359
42	111882	647
49	189885	816
49	Below detection	No tumor
49	293	90
49	41477	2521

**Table XVII: Comparison of Tumor Weight to HBV DNA concentration in mice inoculated with G418 resistant HepG2.2.15 cells**

<b>Time point (days)</b>	<b>HBV DNA copies/mL serum</b>	<b>Tumor weight (milligrams)</b>
37	7000	1120.0
37	no sample	no sample
37	400000	1962.3
37	26000	558.5
37	380000	2286.0
37	100	317.2
37	52000	1429.0
37	100	427.4
37	26000	813.2
37	1400	631.6
37	186000	1101.5
37	134000	1573.0
37	17800	1040.0
37	16600	1327.2
37	8200	275.7
37	68000	632.8
37	24000	1090.0
37	58000	1082.7
37	12400	1116.3
37	100	763.3

Table XVIII: HCV DNAzyme and Substrate Sequence

Pos	Substrate	SEQ ID	DNAZYME	SEQ ID
10	UGGGGGCG A CACUCCAC	2594	GTGGAGTG GGCTAGCTACAACGA CGCCCCCA	11343
12	GGGGCGAC A CUCCACCA	2595	TGGTGGAG GGCTAGCTACAACGA GTCGCCCC	11344
17	GACACUCC A CCAUAGAU	2596	ATCTATGG GGCTAGCTACAACGA GGAGTGTC	11345
20	ACUCCACC A UAGAUCAC	2597	GTGATCTA GGCTAGCTACAACGA GGTGGAGT	11346
24	CACCAUAG A UCACUCCC	2598	GGGAGTGA GGCTAGCTACAACGA CTATGGTG	11347
27	CAUAGAUC A CUCCCCUG	2599	CAGGGGAG GGCTAGCTACAACGA GATCTATG	11348
35	ACUCCCCU G UGAGGAAC	2600	GTTCTCTA GGCTAGCTACAACGA AGGGGAGT	11349
42	UGUGAGGA A CUACUGUC	2601	GACAGTAG GGCTAGCTACAACGA TCCTCACA	11350
45	GAGGAACU A CUGUCUUC	2602	GAAGACAG GGCTAGCTACAACGA AGTTCTCT	11351
48	GAACUACU G UCUUCACG	2603	CGTGAAGA GGCTAGCTACAACGA AGTAGTTC	11352
54	CUGUCUUC A CGCAGAAA	2604	TTTCTGCG GGCTAGCTACAACGA GAAGACAG	11353
56	GUCUUCAC G CAGAAAGC	2605	GCTTTCTG GGCTAGCTACAACGA GTGAAGAC	11354
63	CGCAGAAA G CGUCUAGC	2606	GCTAGACG GGCTAGCTACAACGA TTTCTGCG	11355
65	CAGAAAGC G UCUGGCA	2607	TGGCTAGA GGCTAGCTACAACGA GCTTTCTG	11356
70	AGCGUCUA G CCAUGGCG	2608	CGCCATGG GGCTAGCTACAACGA TAGACGCT	11357
73	GUCUAGCC A UGGCGUUA	2609	TAACGCCA GGCTAGCTACAACGA GGCTAGAC	11358
76	UAGCCAUG G CGUUAUGA	2610	TACTAACG GGCTAGCTACAACGA CATGGCTA	11359
78	GCCAUGGC G UUAGUAUG	2611	CATACTAA GGCTAGCTACAACGA GCCATGGC	11360
82	UGGCGUUA G UAUGAGUG	2612	CACTCATA GGCTAGCTACAACGA TAACGCCA	11361
84	GCGUUAUG A UGAGUGUC	2613	GACACTCA GGCTAGCTACAACGA ACTAACGC	11362
88	UAGUAUGA G UGUCGUGC	2614	GCACGACA GGCTAGCTACAACGA TCATACTA	11363
90	GUAUGAGU G UCGUGCAG	2615	GTGCACGA GGCTAGCTACAACGA ACTCATAC	11364
93	UGAGUGUC G UGCAGCCU	2616	AGGCTGCA GGCTAGCTACAACGA GACACTCA	11365
95	AGUGUCGU G CAGCCUCC	2617	GGAGGCTG GGCTAGCTACAACGA ACGACACT	11366
98	GUCGUGCA G CCUCCAGG	2618	CCTGGAGG GGCTAGCTACAACGA TGCACGAC	11367
107	CCUCCAGG A CCCCCCU	2619	AGGGGGGG GGCTAGCTACAACGA CCTGGAGG	11368
125	CCGGGAGA G CCAUAGUG	2620	CACTATGG GGCTAGCTACAACGA TCTCCCGG	11369
128	GGAGAGCC A UAGUGGUC	2621	GACCACTA GGCTAGCTACAACGA GGCTCTCC	11370
131	GAGCCAUA G UGGUCUGC	2622	GCAGACCA GGCTAGCTACAACGA TATGGCTC	11371
134	CCAUGAGU G UCUGCGA	2623	TCCGCAGA GGCTAGCTACAACGA CACTATGG	11372
138	AGUGUCU G CGGAACCG	2624	CGGTCCG GGCTAGCTACAACGA AGACCACT	11373
143	UCUGCGGA A CCGGUGAG	2625	CTCACCGG GGCTAGCTACAACGA TCCGCAGA	11374
147	CGGAACCG G UGAGUACA	2626	TGTACTCA GGCTAGCTACAACGA CGGTTCCG	11375
151	ACCGGUGA G UACACCGG	2627	CCGGTGTA GGCTAGCTACAACGA TCACCGGT	11376
153	CGGUGAGU A CACCGGAA	2628	TTCCGGTG GGCTAGCTACAACGA ACTCACCG	11377
155	GUGAGUAC A CCGGAAU	2629	AATTCCGG GGCTAGCTACAACGA GTACTCAC	11378
161	ACACCGGA A UUGCCAGG	2630	CCTGGCAA GGCTAGCTACAACGA TCCGGTGT	11379
164	CCGGAUUU G CCAGGACG	2631	CGTCCTGG GGCTAGCTACAACGA AATTCCGG	11380
170	UUGCCAGG A CGACCGGG	2632	CCTGGTCG GGCTAGCTACAACGA CCTGGCAA	11381
173	CCAGGACG A CCGGGUCC	2633	GGACCCGG GGCTAGCTACAACGA CGTCCTGG	11382
178	ACGACCGG G UCCUUUCU	2634	AGAAAGGA GGCTAGCTACAACGA CCGGTCGT	11383
190	UUUCUUGG A UCAACCCG	2635	CGGGTTGA GGCTAGCTACAACGA CCAAGAAA	11384
194	UUGGAUCA A CCCGCUCA	2636	TGAGCGGG GGCTAGCTACAACGA TGATCCAA	11385
198	AUCAACCC G CUCAAUGC	2637	GCATTGAG GGCTAGCTACAACGA GGTTGAT	11386
203	CCCGCUCA A UGCCUGGA	2638	TCCAGGCA GGCTAGCTACAACGA TGAGCGGG	11387
205	CGCUCAAU G CCUGGAGA	2639	TCTCCAGG GGCTAGCTACAACGA ATTGAGCG	11388
213	GCCUGGAG A UUUGGGCG	2640	CGCCCAA GGCTAGCTACAACGA CTCAGGC	11389
219	AGAUUUGG G CGUGCCCC	2641	GGGGCAGG GGCTAGCTACAACGA CCAATCT	11390
221	AUUUGGGG G UGCCCCCG	2642	CGGGGGCA GGCTAGCTACAACGA GCCCAAAT	11391
223	UUGGGCGU G CCCCCGCG	2643	CGCGGGGG GGCTAGCTACAACGA ACGCCCAA	11392

229	GUGCCCC G CGAGACUG	2644	CAGTCTCG GGCTAGCTACAACGA GGGGGCAC	11393
234	CCC GCAG A CUGCUAGC	2645	GCTAGCAG GGCTAGCTACAACGA CTCGCGGG	11394
237	GCGAGACU G CUAGCCGA	2646	TCGGCTAG GGCTAGCTACAACGA AGTCTCGC	11395
241	GACUGCUA G CCGAGUAG	2647	CTACTCGG GGCTAGCTACAACGA TAGCAGTC	11396
246	CUAGCCGA G UAGUGUUG	2648	CAACACTA GGCTAGCTACAACGA TCGGCTAG	11397
249	GCCGAGUA G UGUUGGGU	2649	ACCCAACA GGCTAGCTACAACGA TACTCGGC	11398
251	CGAGUAGU G UUGGGUCG	2650	CGACCCAA GGCTAGCTACAACGA ACTACTCG	11399
256	AGUGUUGG G UCGCGAAA	2651	TTTCGCGA GGCTAGCTACAACGA CCAACACT	11400
259	GUUGGGUC G CGAAAGGC	2652	GCCTTTTCG GGCTAGCTACAACGA GACCCAAC	11401
266	CGCGAAAG G CCUUGUGG	2653	CCACAAGG GGCTAGCTACAACGA CTTTCGCG	11402
271	AAGGCCUU G UGGUACUG	2654	CAGTACCA GGCTAGCTACAACGA AAGGCCTT	11403
274	GCCUUGUG G UACUGCCU	2655	AGGCAGTA GGCTAGCTACAACGA CACAAGGC	11404
276	CUUGUGGU A CUGCCUGA	2656	TCAGGCAG GGCTAGCTACAACGA ACCACAAG	11405
279	GUGGUACU G CCUGAUAG	2657	CTATCAGG GGCTAGCTACAACGA AGTACCAC	11406
284	ACUGCCUG A UAGGGUGC	2658	GCACCTTA GGCTAGCTACAACGA CAGGCAGT	11407
289	CUGAUAGG G UGUUUGCG	2659	CGCAAGCA GGCTAGCTACAACGA CCTATCAG	11408
291	GAUAGGGU G CUUGCGAG	2660	CTCGCAAG GGCTAGCTACAACGA ACCCTATC	11409
295	GGGUGCUU G CGAGUGCC	2661	GGCACTCG GGCTAGCTACAACGA AAGCACCC	11410
299	GCUUGCGA G UGCCCCGG	2662	CCGGGGGA GGCTAGCTACAACGA TCGCAAGC	11411
301	UUGCGAGU G CCCC GGGA	2663	TCCGGGGG GGCTAGCTACAACGA ACTCGCAA	11412
311	CCCGGGAG G UCUCGUAG	2664	CTACGAGA GGCTAGCTACAACGA CTCCGGGG	11413
316	GAGGUCUC G UAGACCGU	2665	ACGGTCTA GGCTAGCTACAACGA GAGACCTC	11414
320	UCUCGUAG A CCGUGCAC	2666	GTGCACGG GGCTAGCTACAACGA CTACGAGA	11415
323	CGUAGACC G UGCACCAU	2667	ATGGTGCA GGCTAGCTACAACGA GGTCTACG	11416
325	UAGACCGU G CACCAUGA	2668	TCATGGTG GGCTAGCTACAACGA ACGGTCTA	11417
327	GACCGUGC A CCAUGAGC	2669	GCTCATGG GGCTAGCTACAACGA GCACGGTC	11418
330	CGUGCACC A UGAGCAG	2670	CGTGCTCA GGCTAGCTACAACGA GGTGCACG	11419
334	CACCAUGA G CACGAAUC	2671	GATTCGTG GGCTAGCTACAACGA TCATGGTG	11420
336	CCAUGAGC A CGAAUCCU	2672	AGGATTCG GGCTAGCTACAACGA GAGACTGG	11421
340	GAGCACGA A UCCUAAAC	2673	GTTTAGGA GGCTAGCTACAACGA TCGTGCTC	11422
347	AAUCCUAA A CCUCAAG	2674	CTTTGAGG GGCTAGCTACAACGA TTAGGATT	11423
360	AAAGAAA A CCAAACGU	2675	ACGTTTGG GGCTAGCTACAACGA TTTTCTTT	11424
365	AAAACCAA A CGUAACAC	2676	GTGTTACG GGCTAGCTACAACGA TTGTTTTT	11425
367	AACCAAAC G UAACACCA	2677	TGGTGTTA GGCTAGCTACAACGA GTTTGGTT	11426
370	CAAACGUA A CACCAACC	2678	GGTGGTGG GGCTAGCTACAACGA TACGTTTG	11427
372	AACGUAAC A CCAACCGC	2679	GCGGTTGG GGCTAGCTACAACGA GTTACGTT	11428
376	UAACACCA A CCGCCGCC	2680	GGCGGCGG GGCTAGCTACAACGA TGGTGTTA	11429
379	CACCAACC G CCGCCAC	2681	GTGGGCGG GGCTAGCTACAACGA GGTGGTG	11430
382	CAACCGCC G CCCACAGG	2682	CCTGTGGG GGCTAGCTACAACGA GCGGTTTG	11431
386	CGCCGCCC A CAGGACGU	2683	ACGTCTCTG GGCTAGCTACAACGA GGGCGGCG	11432
391	CCCACAGG A CGUCAAGU	2684	ACTTGACG GGCTAGCTACAACGA CCTGTGGG	11433
393	CACAGGAC G UCAAGUUC	2685	GAACCTGA GGCTAGCTACAACGA GTCTGTG	11434
398	GACGUCAA G UUCCGGG	2686	CCCGGGAA GGCTAGCTACAACGA TTGACGTC	11435
406	GUUCCCGG G CGGUGGUC	2687	GACCACCG GGCTAGCTACAACGA CCGGGAAC	11436
409	CCCGGGCG G UGGUCAGA	2688	TCTGACCA GGCTAGCTACAACGA CGCCCGGG	11437
412	GGGCGGUG G UCAGAUCC	2689	CGATCTGA GGCTAGCTACAACGA CACCGCCC	11438
417	GUGGUCAG A UCGUUGGU	2690	ACCAACGA GGCTAGCTACAACGA CTGACCAC	11439
420	GUCAGAUCC G UUGGUGGA	2691	TCCACCAA GGCTAGCTACAACGA GATCTGAC	11440
424	GAUCGUUG G UGGAGUUU	2692	AAACTCCA GGCTAGCTACAACGA CAACGATC	11441
429	UUGGUGGA G UUUACCUG	2693	CAGGTAAA GGCTAGCTACAACGA TCCACCAA	11442
433	UGGAGUUU A CCUGUUGC	2694	GCAACAGG GGCTAGCTACAACGA AAACCTCA	11443
437	GUUUACCU G UUGCCGCG	2695	CGCGGCAA GGCTAGCTACAACGA AGGTAAAC	11444
440	UACCUGUU G CCGCGCAG	2696	CTGCGCGG GGCTAGCTACAACGA AACAGGTA	11445
443	CUGUUGCC G CGCAGGGG	2697	CCCCTGCG GGCTAGCTACAACGA GGCAACAG	11446
445	GUUGCCGC G CAGGGGCC	2698	GGCCCTCG GGCTAGCTACAACGA GCGGCAAC	11447
451	GCGCAGGG G CCCCAGGU	2699	ACCTGGGG GGCTAGCTACAACGA CCCTGCGC	11448

458	GGCCCCAG G UUGGGUGU	2700	ACACCCAA GGCTAGCTACAACGA CTGGGGCC	11449
463	CAGGUUGG G UGUGCGCG	2701	CGCGCACA GGCTAGCTACAACGA CCAACCTG	11450
465	GGUUGGGU G UGCGCGCG	2702	CGCGCGCA GGCTAGCTACAACGA ACCCAACC	11451
467	UUGGGUGU G CGCGCGAC	2703	GTCGCGCG GGCTAGCTACAACGA ACACCCAA	11452
469	GGGUGUGC G CGCGACUA	2704	TAGTCGCG GGCTAGCTACAACGA GCACACCC	11453
471	GUGUGCGC G CGACUAGG	2705	CCTAGTCG GGCTAGCTACAACGA GCGCACAC	11454
474	UGCGCGCG A CUAGGAAG	2706	CTTCCTAG GGCTAGCTACAACGA CGCGCGCA	11455
483	CUAGGAAG A CUUCCGAG	2707	CTCGGAAG GGCTAGCTACAACGA CTTCCTAG	11456
491	ACUUCCGA G CGGUCGCA	2708	TGCGACCG GGCTAGCTACAACGA TCGGAAGT	11457
494	UCCGAGCG G UCGCAACC	2709	GGTTGCGA GGCTAGCTACAACGA CGCTCGGA	11458
497	GAGCGGUC G CAACUCG	2710	CGAGGTTG GGCTAGCTACAACGA GACCCTC	11459
500	CGGUGCGA A CCUCGUGG	2711	CCACGAGG GGCTAGCTACAACGA TCGGACCG	11460
505	GCAACCUC G UGGAAGGC	2712	GCCTTCCA GGCTAGCTACAACGA GAGGTTGC	11461
512	CGUGGAAG G CGACAACC	2713	GGTTGTGCG GGCTAGCTACAACGA CTTCACG	11462
515	GGAAGGCG A CAACCUAU	2714	ATAGGTTG GGCTAGCTACAACGA CGCCTTCC	11463
518	AGGCGACA A CCUAUCCC	2715	GGGATAGG GGCTAGCTACAACGA TGTCGCTT	11464
522	GACAACCU A UCCCCAAG	2716	CTTGGGGA GGCTAGCTACAACGA AGGTTGTC	11465
531	UCCCCAAG G CUCGCCGG	2717	CCGGCGAG GGCTAGCTACAACGA CTGGGGA	11466
535	CAAGGCUC G CCGGCCCG	2718	CGGGCCGG GGCTAGCTACAACGA GAGCCTTG	11467
539	GCUCGCCG G CCCGAGGG	2719	CCCTCGGG GGCTAGCTACAACGA CGGCGAGC	11468
547	GCCCCAGG G CAGGGCCU	2720	AGGCCCTG GGCTAGCTACAACGA CCTCGGGC	11469
552	AGGGCAGG G CCUGGGCU	2721	AGCCCAGG GGCTAGCTACAACGA CCTGCCCT	11470
558	GGGCCUGG G CUCAGCCC	2722	GGGCTGAG GGCTAGCTACAACGA CCAGGCC	11471
563	UGGGCUCA G CCCGGGUA	2723	TACCCGGG GGCTAGCTACAACGA TGAGCCCA	11472
569	CAGCCCGG G UACCCUUG	2724	CAAGGGTA GGCTAGCTACAACGA CCGGCTG	11473
571	GCCCCGGU A CCCUUGGC	2725	GCCAAGGG GGCTAGCTACAACGA ACCCGGGC	11474
578	UACCCUUG G CCCUCUA	2726	TAGAGGGG GGCTAGCTACAACGA CAAGGGTA	11475
586	GCCCCUCU A UGGCAAUG	2727	CATTGCCA GGCTAGCTACAACGA AGAGGGC	11476
589	CCUCUAUG G CAAUGAGG	2728	CCTCATTT GGCTAGCTACAACGA CATAGAGG	11477
592	CUAUGGCA A UGAGGGCU	2729	AGCCCTCA GGCTAGCTACAACGA TGCCATAG	11478
598	CAAUGAGG G CUUAGGGU	2730	ACCCTAAG GGCTAGCTACAACGA CCTCATTT	11479
605	GGCUUAGG G UGGGCAGG	2731	CCTGCCCA GGCTAGCTACAACGA CCTAAGCC	11480
609	UAGGGUGG G CAGGAUGG	2732	CCATCCTG GGCTAGCTACAACGA CCACCTTA	11481
614	UGGGCAGG A UGGUCUCU	2733	AGGAGCCA GGCTAGCTACAACGA CCTGCCCA	11482
617	GCAGGAUG G CUCCUGUC	2734	GACAGGAG GGCTAGCTACAACGA CATCCTGC	11483
623	UGGCUCUC G UCACCCCG	2735	CGGGGTGA GGCTAGCTACAACGA AGGAGCCA	11484
626	CUCCUGUC A CCCCGCGG	2736	CCGCGGGG GGCTAGCTACAACGA GACAGGAG	11485
631	GUCACCCC G CGGCUCUC	2737	GGGAGCCG GGCTAGCTACAACGA GGGGTGAC	11486
634	ACCCCGCG G CUCCCGGC	2738	GCCGGGAG GGCTAGCTACAACGA CGCGGGGT	11487
641	GGCUCCCG G CCUAGUUG	2739	CAACTAGG GGCTAGCTACAACGA CGGGAGCC	11488
646	CCGGCCUA G UUGGGGCC	2740	GGCCCCAA GGCTAGCTACAACGA TAGGCCGG	11489
652	UAGUUGGG G CCCACCGG	2741	CCGTGGGG GGCTAGCTACAACGA CCAACTA	11490
657	GGGGCCCC A CGGACCCC	2742	GGGGTCCG GGCTAGCTACAACGA GGGGCCCC	11491
661	CCCCACGG A CCCCCGGC	2743	GCCGGGGG GGCTAGCTACAACGA CCGTGGGG	11492
668	GACCCCGG G CGUAGGUC	2744	GACCTACG GGCTAGCTACAACGA CGGGGCTC	11493
670	CCCCCGGC G UAGGUCGC	2745	GCGACCTA GGCTAGCTACAACGA GCCGGGGG	11494
674	CGGCGUAG G UCGCGUAA	2746	TTACGCGA GGCTAGCTACAACGA CTACGCCG	11495
677	CGUAGGUC G CGUAACUU	2747	AAGTTACG GGCTAGCTACAACGA GACCTACG	11496
679	UAGGUCGC G UAACUUGG	2748	CCAAGTTA GGCTAGCTACAACGA GCGACCTA	11497
682	GUCGCGUA A CUUGGGUA	2749	TACCCAAG GGCTAGCTACAACGA TACGCGAC	11498
688	UAACUUGG G UAAGGUCA	2750	TGACCTTA GGCTAGCTACAACGA CCAAGTTA	11499
693	UGGGUAGG G UCAUCGAU	2751	ATCGATGA GGCTAGCTACAACGA CTTACCCA	11500
696	GUAAGGUC A UCGAUACC	2752	GGTATCGA GGCTAGCTACAACGA GACCTTAC	11501
700	GGUACAUCG A UACCCUCA	2753	TGAGGGTA GGCTAGCTACAACGA CGATGACC	11502
702	UCAUCGAU A CCCUCACA	2754	TGTGAGGG GGCTAGCTACAACGA ATCGATGA	11503
708	AUACCCUC A CAUGCGGC	2755	GCCGCATG GGCTAGCTACAACGA GAGGGTAT	11504

710	ACCCUCAC A UGCGGCUU	2756	AAGCCGCA GGCTAGCTACAACGA GTGAGGGT	11505
712	CCUCACAU G CGGCUUCG	2757	CGAAGCCG GGCTAGCTACAACGA ATGTGAGG	11506
715	CACAUGCG G CUUCGCCG	2758	CGGCGAAG GGCTAGCTACAACGA CGCATGTG	11507
720	GCGGCUUC G CCGACCUC	2759	GAGGTCGG GGCTAGCTACAACGA GAAGCCGC	11508
724	CUUCGCCG A CCUCAUGG	2760	CCATGAGG GGCTAGCTACAACGA CGGCGAAG	11509
729	CCGACCUC A UGGGGUAC	2761	GTACCCCA GGCTAGCTACAACGA GAGGTCGG	11510
734	CUCAUGGG G UACAUUC	2762	GGAATGTA GGCTAGCTACAACGA CCCATGAG	11511
736	CAUGGGGU A CAUCCGCU	2763	GCGGAATG GGCTAGCTACAACGA ACCCCATG	11512
738	UGGGGUU A UUCGCGUC	2764	GAGCGGAA GGCTAGCTACAACGA GTACCCCA	11513
743	UACAUUC G CUCGUCGG	2765	CCGACGAG GGCTAGCTACAACGA GGAATGTA	11514
747	UUCGCGUC G UCGGCGCC	2766	GCGGCCAG GGCTAGCTACAACGA GAGCGGAA	11515
751	GCUCGUCG G CGCCCCCU	2767	AGGGGGCG GGCTAGCTACAACGA CGCAGAGC	11516
753	UCGUCGCG G CCCCCUUG	2768	CAAGGGGG GGCTAGCTACAACGA GCCGACGA	11517
766	CUUGGGAG G CACUGCCA	2769	TGGCAGTG GGCTAGCTACAACGA CTCCCAAG	11518
768	UGGGAGGC A CUGCCAGG	2770	CCTGGCAG GGCTAGCTACAACGA GCCTCCCA	11519
771	GAGGCACU G CCAGGGCC	2771	GGCCCTGG GGCTAGCTACAACGA AGTGCTCT	11520
777	CUGCCAGG G CCCUGGCG	2772	CGCCAGGG GGCTAGCTACAACGA CCTGGCAG	11521
783	GGGCCCGU G CGCAUGGC	2773	GCCATGCG GGCTAGCTACAACGA CAGGGCCC	11522
785	GCCCUGGC G CAUGGCGU	2774	ACGCCATG GGCTAGCTACAACGA GCCAGGGC	11523
787	CCUGGCGC A UGGCGUCC	2775	GGACGCCA GGCTAGCTACAACGA GCGCCAGG	11524
790	GGCGCAUG G CGUCCGGG	2776	CCCGGACG GGCTAGCTACAACGA CATGCGCC	11525
792	CGCAUGGC G UCCGGGUU	2777	AACCCGGA GGCTAGCTACAACGA GCCATGCG	11526
798	GCGUCCGG G UUCUGGAA	2778	TTCCAGAA GGCTAGCTACAACGA CCGGACGC	11527
808	UCUGGAAG A CGGCGUGA	2779	TCACGCCG GGCTAGCTACAACGA CTTCCAGA	11528
811	GGAAGACG G CGUGAACU	2780	AGTTCACG GGCTAGCTACAACGA CGTCTTCC	11529
813	AAGACGGC G UGAACUUA	2781	ATAGTTCA GGCTAGCTACAACGA GCCGTCTT	11530
817	CGGCGUGA A CUAUGCAA	2782	TTGCATAG GGCTAGCTACAACGA TCACGCCG	11531
820	CGUGAACU A UGCAACAG	2783	CTGTTGCA GGCTAGCTACAACGA CATGCACG	11532
822	UGAACUAU G CAACAGGG	2784	CCCTGTTG GGCTAGCTACAACGA ATAGTTCA	11533
825	ACUAUGCA A CAGGGAU	2785	ATTCCCTG GGCTAGCTACAACGA TGCATAGT	11534
832	AACAGGGA A UCUGCCCG	2786	CGGGCAGA GGCTAGCTACAACGA TCCCTGTT	11535
836	GGGAUUCU G CCCGGUUG	2787	CAACCGGG GGCTAGCTACAACGA AGATTCCC	11536
841	UCUGCCCG G UUGCUCUU	2788	AAGAGCAA GGCTAGCTACAACGA CGGGCAGA	11537
844	GCCCGGUU G CUCUUCU	2789	AGAAAGAG GGCTAGCTACAACGA AACCGGGC	11538
855	CUUUCUCU A UCUCCUC	2790	GAGGAAGA GGCTAGCTACAACGA AGAGAAAG	11539
867	UCCUCUUG G CUCUGCUG	2791	CAGCAGAG GGCTAGCTACAACGA CAAGAGGA	11540
872	UUGGUCU G CUGCCUG	2792	CAGGGCAG GGCTAGCTACAACGA AGAGCCAA	11541
875	GCUCUGCU G CCUGUCU	2793	AGACAGGG GGCTAGCTACAACGA AGCAGAGC	11542
880	GCUGCCCU G UCUGACCA	2794	TGGTCAGA GGCTAGCTACAACGA AGGGCAGC	11543
885	CCUGUCUG A CCAUCCCA	2795	TGGGATGG GGCTAGCTACAACGA CAGACAGG	11544
888	GUCUGACC A UCCAGCC	2796	GGCTGGGA GGCTAGCTACAACGA GGTGAGAC	11545
894	CCAUCCCA G CCUCGCU	2797	AGCGGAGG GGCTAGCTACAACGA TGGGATGG	11546
900	CAGCCUCC G CUUAUGAG	2798	CTCATAAG GGCTAGCTACAACGA GGAGGCTG	11547
904	CUCCGCUU A UGAGGUGU	2799	ACACCTCA GGCTAGCTACAACGA AAGCGGAG	11548
909	CUUAUGAG G UGUGCAAC	2800	GTTGCACA GGCTAGCTACAACGA CTCATAAG	11549
911	UAUGAGGU G UGCAACGC	2801	GCGTTGCA GGCTAGCTACAACGA ACCTCATA	11550
913	UGAGGUGU G CAACGCGU	2802	ACGCGTTG GGCTAGCTACAACGA ACACCTCA	11551
916	GGUGUGCA A CGCGUCCG	2803	CGGACGCG GGCTAGCTACAACGA TGCACACC	11552
918	UGUGCAAC G CGUCCGGG	2804	CCCGGACG GGCTAGCTACAACGA GTTGCACA	11553
920	UGCAACGC G UCCGGGCU	2805	AGCCCGGA GGCTAGCTACAACGA GCGTTGCA	11554
926	GCGUCCGG G CUGUACCA	2806	TGGTACAG GGCTAGCTACAACGA CCGGACGC	11555
929	UCCGGGCU G UACCAUGU	2807	ACATGGTA GGCTAGCTACAACGA AGCCCGGA	11556
931	CGGGCUGU A CCAUGUCA	2808	TGACATGG GGCTAGCTACAACGA ACAGCCCG	11557
934	GCUGUACC A UGUCACGA	2809	TCGTGACA GGCTAGCTACAACGA GGTACAGC	11558
936	UGUACCAU G UCACGAAC	2810	GTTCTGTA GGCTAGCTACAACGA ATGGTACA	11559
939	ACCAUGUC A CGAACGAU	2811	ATCGTTCG GGCTAGCTACAACGA GACATGGT	11560



943	UGUCACGA A CGAUUGCU	2812	AGCAATCG GGCTAGCTACAACGA TCGTGACA	11561
946	CACGAACG A UUGCUCCA	2813	TGGAGCAA GGCTAGCTACAACGA CGTTCGTG	11562
949	GAACGAUU G CUCCAACU	2814	AGTTGGAG GGCTAGCTACAACGA AATCGTTC	11563
955	UUGCUCCA A CUCAAGCA	2815	TGCTTGAG GGCTAGCTACAACGA TGGAGCAA	11564
961	CAACUCAA G CAUUGUGU	2816	ACACAATG GGCTAGCTACAACGA TTGAGTTG	11565
963	ACUCAAGC A UUGUGUAU	2817	ATACACAA GGCTAGCTACAACGA GCTTGAGT	11566
966	CAAGCAUU G UGUAUGAG	2818	CTCATACA GGCTAGCTACAACGA AATGCTTG	11567
968	AGCAUUGU G UAUGAGGC	2819	GCCTCATA GGCTAGCTACAACGA ACAATGCT	11568
970	CAUUGUGU A UGAGGCAG	2820	CTGCCTCA GGCTAGCTACAACGA ACACAATG	11569
975	UGUAUGAG G CAGAGGAC	2821	GTCCTCTG GGCTAGCTACAACGA CTCATACA	11570
982	GGCAGAGG A CAUGAUC	2822	TGATCATG GGCTAGCTACAACGA CCTCTGCC	11571
984	CAGAGGAC A UGAUACG	2823	CATGATCA GGCTAGCTACAACGA GTCCTCTG	11572
987	AGGACAUG A UCAUGCAC	2824	GTGCATGA GGCTAGCTACAACGA CATGTCTT	11573
990	ACAUGAUC A UGCACACC	2825	GGTGTGCA GGCTAGCTACAACGA GATCATGT	11574
992	AUGAUCAU G CACACCCC	2826	GGGGTGTG GGCTAGCTACAACGA ATGATCAT	11575
994	GAUCAUGC A CACCCCGG	2827	CCGGGGTG GGCTAGCTACAACGA GCATGATC	11576
996	UCAUGCAC A CCCCAGGG	2828	CCCCGGGG GGCTAGCTACAACGA GTGCATGA	11577
1004	ACCCCGGG G UGCGUGCC	2829	GGCACGCA GGCTAGCTACAACGA CCGGGGGT	11578
1006	CCCGGGGU G CGUGCCCU	2830	AGGGCACG GGCTAGCTACAACGA ACCCCGGG	11579
1008	CGGGGUGC G UGCCCUGC	2831	GCAGGGCA GGCTAGCTACAACGA GCACCCCG	11580
1010	GGGUGCGU G CCCUGCGU	2832	ACGCAAGG GGCTAGCTACAACGA ACGCACCC	11581
1015	CGUGCCCU G CGUUCGGG	2833	CCCGAAGC GGCTAGCTACAACGA AGGGCAGC	11582
1017	UGCCCUGC G UUCGGGAG	2834	CTCCCGAA GGCTAGCTACAACGA GCAGGGCA	11583
1027	UCGGGAGA A CAACUCCU	2835	AGGAGTTG GGCTAGCTACAACGA TCTCCCGA	11584
1030	GGAGAACA A CUCCUCCC	2836	GGGAGGAG GGCTAGCTACAACGA TGTCTCTC	11585
1039	CUCCUCCC G CUGCUGGG	2837	CCCAGCAG GGCTAGCTACAACGA GGGAGGAG	11586
1042	CUCCCGCU G CUGGGUAG	2838	CTACCCAG GGCTAGCTACAACGA AGCGGGAG	11587
1047	GCUGCUGG G UAGCGCUC	2839	GAGCGCTA GGCTAGCTACAACGA CCAGCAGC	11588
1050	GCUGGGUA G CGCUCACU	2840	AGTGAGCG GGCTAGCTACAACGA TACCAGC	11589
1052	UGGGUAGC G CUCACUCC	2841	GGAGTGAG GGCTAGCTACAACGA GCTACCCA	11590
1056	UAGCGCUC A CUCCACG	2842	CGTGGGAG GGCTAGCTACAACGA GAGCGCTA	11591
1062	UCACUCCC A CGCUCGCG	2843	CGCGAGCG GGCTAGCTACAACGA GGGAGTGA	11592
1064	ACUCCAC G CUCGCGGC	2844	GCCGCGAG GGCTAGCTACAACGA GTGGGAGT	11593
1068	CCACGCUC G CGGCCAGG	2845	CCTGGCCG GGCTAGCTACAACGA GAGCGTGG	11594
1071	CGCUCGCG G CCAGGAU	2846	ATTCTCTG GGCTAGCTACAACGA CGCGAGCG	11595
1078	GGCCAGGA A UGCCAGCA	2847	TGCTGGCA GGCTAGCTACAACGA TCCTGGCC	11596
1080	CCAGGAU G CCAGCAUC	2848	GATGCTGG GGCTAGCTACAACGA ATTCTCTG	11597
1084	GAAUGCCA G CAUCCCCA	2849	TGGGGATG GGCTAGCTACAACGA TGGCATTC	11598
1086	AUGCCAGC A UCCCCACU	2850	AGTGGGGA GGCTAGCTACAACGA GCTGGCAT	11599
1092	GCAUCCCC A CUACGACG	2851	CGTCGTAG GGCTAGCTACAACGA GGGGATGC	11600
1095	UCCCCACU A CGACGAUA	2852	TATCGTCG GGCTAGCTACAACGA AGTGGGGA	11601
1098	CCACUACG A CGAUACGG	2853	CCGTATCG GGCTAGCTACAACGA CGTAGTGG	11602
1101	CUACGACG A UACGGCGU	2854	ACGCCGTA GGCTAGCTACAACGA CGTCGTAG	11603
1103	ACGACGAU A CGGCGUCA	2855	TGACGCCG GGCTAGCTACAACGA ATCGTCGT	11604
1106	ACGAUACG G CGUCACGU	2856	ACGTGACG GGCTAGCTACAACGA CGTATCGT	11605
1108	GAUACGGC G UCACGUCG	2857	CGACGTGA GGCTAGCTACAACGA GCCGTATC	11606
1111	ACGGCGUC A CGUCGAUU	2858	AATCGACG GGCTAGCTACAACGA GACGCCGT	11607
1113	GGCGUCAC G UCGAUUUG	2859	CAAATCGA GGCTAGCTACAACGA GTGACGCC	11608
1117	UCACGUCG A UUUGCUCG	2860	CGAGCAAA GGCTAGCTACAACGA CGACGTGA	11609
1121	GUCGAUUU G CUCGUUGG	2861	CCAACGAG GGCTAGCTACAACGA AAATCGAC	11610
1125	AUUUGCUC G UUGGGGCG	2862	CGCCCCAA GGCTAGCTACAACGA GAGCAAAT	11611
1131	UCGUUGGG G CGGCUGCU	2863	AGCAGCCG GGCTAGCTACAACGA CCAACGGA	11612
1134	UUGGGGCG G CUGCUUUC	2864	GAAAGCA GGCTAGCTACAACGA CGCCCCAA	11613
1137	GGGCGCGU G CUUUCUGC	2865	GCAGAAAG GGCTAGCTACAACGA AGCCGCCC	11614
1144	UGCUUUCU G CUCUGCUA	2866	TAGCAGAG GGCTAGCTACAACGA AGAAAGCA	11615
1149	UCUGCUCU G CUAUGUAC	2867	GTACATAG GGCTAGCTACAACGA AGAGCAGA	11616

1152	GCUCUGCU A UGUACGUG	2868	CACGTACA GGCTAGCTACAACGA AGCAGAGC	11617
1154	UCUGCUAU G UACGUGGG	2869	CCCACGTA GGCTAGCTACAACGA ATAGCAGA	11618
1156	UGCUAUGU A CGUGGGGG	2870	CCCCCAGG GGCTAGCTACAACGA ACATAGCA	11619
1158	CUAUGUAC G UGGGGGAU	2871	ATCCCCCA GGCTAGCTACAACGA GTACATAG	11620
1165	CGUGGGGG A UCUCUGCG	2872	CGCAGAGA GGCTAGCTACAACGA CCCCCAGG	11621
1171	GGAUCUCU G CGGAUCUG	2873	CAGATCCG GGCTAGCTACAACGA AGAGATCC	11622
1175	CUCUGCGG A UCUGUCUU	2874	AAGACAGA GGCTAGCTACAACGA CCGCAGAG	11623
1179	GCGGAUCU G UCUUCCUC	2875	GAGGAAGA GGCTAGCTACAACGA AGATCCGC	11624
1188	UCUUCCUC G UCUCUCAG	2876	CTGAGAGA GGCTAGCTACAACGA GAGGAAGA	11625
1196	GUCUCUCA G CUGUUCAC	2877	GTGAACAG GGCTAGCTACAACGA TGAGAGAC	11626
1199	UCUCAGCU G UUCACCUU	2878	AAGGTGAA GGCTAGCTACAACGA AGCTGAGA	11627
1203	AGCUGUUC A CCUUCUCG	2879	CGAGAAGG GGCTAGCTACAACGA GAACAGCT	11628
1211	ACCUUCUC G CCUCGCCG	2880	CGGCGAGG GGCTAGCTACAACGA GAGAAGGT	11629
1216	CUCGCCUC G CCGGUAUG	2881	CATACCGG GGCTAGCTACAACGA GAGGCGAG	11630
1220	CCUCGCCG A UAUGAGAC	2882	GTCTCATA GGCTAGCTACAACGA CGGCGAGG	11631
1222	UCGCCGGU A UGAGACAG	2883	CTGTCTCA GGCTAGCTACAACGA ACCGGCGA	11632
1227	GGUAUGAG A CAGUACAG	2884	CTGTACTG GGCTAGCTACAACGA TGTATACC	11633
1230	AUGAGACA G UACAGGAC	2885	GTCCTGTA GGCTAGCTACAACGA TGTCTCAT	11634
1232	GAGACAGU A CAGGACUG	2886	CAGTCCTG GGCTAGCTACAACGA ACTGTCTC	11635
1237	AGUACAGG A CUGUAAUU	2887	AATTACAG GGCTAGCTACAACGA CCTGTACT	11636
1240	ACAGGACU G UAAUUGCU	2888	AGCAATTA GGCTAGCTACAACGA AGTCCTGT	11637
1243	GGACUGUA A UUGCUCGA	2889	TCGAGCAA GGCTAGCTACAACGA TACAGTCC	11638
1246	CUGUAAUU G CUCGAUCU	2890	AGATCGAG GGCTAGCTACAACGA AATTACAG	11639
1251	AUJGCUCG A UCUAUCCC	2891	GGGATAGA GGCTAGCTACAACGA CGAGCAAT	11640
1255	CUCGAUCU A UCCC GGCC	2892	GGCCGGGA GGCTAGCTACAACGA AGATCGAG	11641
1261	CUAUCCCG G CCACGUAU	2893	ATACGTGG GGCTAGCTACAACGA CGGGATAG	11642
1264	UCCC GGCC A CGUAUCAG	2894	CTGATACG GGCTAGCTACAACGA GGCCGGGA	11643
1266	CCGGCCAC G UAUCAGGC	2895	GCCTGATA GGCTAGCTACAACGA GTGGCCGG	11644
1268	GGCCACGU A UCAGGCCA	2896	TGGCCTGA GGCTAGCTACAACGA ACGTGGCC	11645
1273	CGUAUCAG G CCAUCGCA	2897	TGCGATGG GGCTAGCTACAACGA CTGATACG	11646
1276	AUCAGGCC A UCGCAUGG	2898	CCATGCGA GGCTAGCTACAACGA GGCCTGAT	11647
1279	AGGCCAUC G CAUGGCUU	2899	AAGCCATG GGCTAGCTACAACGA GATGGCCT	11648
1281	GCCAUCGC A UGGCUUGG	2900	CCAAGCCA GGCTAGCTACAACGA CCGATGGC	11649
1284	AUCGCAUG G CUUGGGAU	2901	ATCCCAAG GGCTAGCTACAACGA CATGCGAT	11650
1291	GGCUUGGG A UAUGAUGA	2902	TCATCATA GGCTAGCTACAACGA CCAAGCC	11651
1293	CUUGGGAU A UGAUGAUG	2903	CATCATCA GGCTAGCTACAACGA ATCCCAAG	11652
1296	GGGAUAUG A UGAUGAAU	2904	ATTATATCA GGCTAGCTACAACGA CATATCCC	11653
1299	AUAUGAUG A UGAUUGG	2905	CCAATTCA GGCTAGCTACAACGA CATCATAT	11654
1303	GAUGAUGA A UUGGUCAC	2906	GTGACCAA GGCTAGCTACAACGA TCATCATC	11655
1307	AUGAAUUG G UCACCUAC	2907	GTAGGTGA GGCTAGCTACAACGA CAATTCAT	11656
1310	AAUUGGUC A CCUACAAC	2908	GTTGTAGG GGCTAGCTACAACGA GACCAATT	11657
1314	GGUACCTU A CAACAGCC	2909	GGCTGTTG GGCTAGCTACAACGA AGGTGACC	11658
1317	CACCUACA A CAGCCCUA	2910	TAGGGCTG GGCTAGCTACAACGA TGTAGGTG	11659
1320	CUACAACA G CCCUAGUG	2911	CACTAGGG GGCTAGCTACAACGA TGTGTAGT	11660
1326	CAGCCCUA G UGGUAUCG	2912	CGATACCA GGCTAGCTACAACGA TAGGGCTG	11661
1329	CCCUAGUG G UAUCGCAG	2913	CTGCGATA GGCTAGCTACAACGA CACTAGGG	11662
1331	CUAGUGGU A UCGCAGUU	2914	AACTGCGA GGCTAGCTACAACGA ACCACTAG	11663
1334	GUGGUAGU G CAGUUGCU	2915	AGCAACTG GGCTAGCTACAACGA GATACCAC	11664
1337	GUAUCGCA G UUGCUCG	2916	CGAGCAA GGCTAGCTACAACGA TGCGATAC	11665
1340	UCGCAGUU G CUCCGGAU	2917	ATCCGGAG GGCTAGCTACAACGA AACTGCGA	11666
1347	UGCUCGGG A UCCCACAA	2918	TTGTGGGA GGCTAGCTACAACGA CCGGAGCA	11667
1352	CGGAUCCC A CAAGCCGU	2919	ACGGCTTG GGCTAGCTACAACGA GGGATCCG	11668
1356	UCCCACAA G CCGUCGUG	2920	CACGACGG GGCTAGCTACAACGA TTGTGGGA	11669
1359	CACAAGCC G UCGUGGAC	2921	GTCCACGA GGCTAGCTACAACGA GGCTTGTG	11670
1362	AAGCCGUC G UGGACAUG	2922	CATGTCCA GGCTAGCTACAACGA GACGGCTT	11671
1366	CGUCGUGG A CAUGGUGG	2923	CCACCATG GGCTAGCTACAACGA CCACGACG	11672

1368	UCGUGGAC A UGGUGGCG	2924	CGCCACCA GGCTAGCTACAACGA GTCCACGA	11673
1371	UGGACAUG G UGGCGGGG	2925	CCCCGCCA GGCTAGCTACAACGA CATGTCCA	11674
1374	ACAUGGUG G CGGGGGCC	2926	GGCCCCCG GGCTAGCTACAACGA CACCATGT	11675
1380	UGGCGGGG G CCCACUGG	2927	CCAGTGGG GGCTAGCTACAACGA CCCCGCCA	11676
1384	GGGGGCCC A CUGGGGAG	2928	CTCCCCAG GGCTAGCTACAACGA GGGCCCCC	11677
1392	ACUGGGGA G UCCUGGCG	2929	CGCCAGGA GGCTAGCTACAACGA TCCCCAGT	11678
1398	GAGUCCUG G CGGGCCUU	2930	AAGGCCCG GGCTAGCTACAACGA CAGGACTC	11679
1402	CCUGGCGG G CCUUGCCU	2931	AGGCAAGG GGCTAGCTACAACGA CCGCCAGG	11680
1407	CGGGCCUU G CCUAUUUAU	2932	ATAATAGG GGCTAGCTACAACGA AAGGCCCG	11681
1411	CCUUGCCU A UUAUUGCA	2933	TGGAATAA GGCTAGCTACAACGA AGGCAAGG	11682
1414	UGCCUAUU A UUGCAUGG	2934	CCATGGAA GGCTAGCTACAACGA AATAGGCA	11683
1419	AUUAUUCC A UGGUGGGG	2935	CCCCACCA GGCTAGCTACAACGA GGAATAAT	11684
1422	AUCCAGA G UGGGGAAC	2936	GTTCCCCA GGCTAGCTACAACGA CATGGAAT	11685
1429	GGUGGGGA A CUGGGCUA	2937	TAGCCCAG GGCTAGCTACAACGA TCCCCACC	11686
1434	GGAACUGG G CUAAGGUG	2938	CACCTTAG GGCTAGCTACAACGA CCAGTTCC	11687
1440	GGGCUAAG G UGUUGAUU	2939	AATCAACA GGCTAGCTACAACGA CTTAGCCC	11688
1442	GCUAAGGU G UUGAUUGU	2940	ACAATCAA GGCTAGCTACAACGA ACCTTAGC	11689
1446	AGGUGUUG A UUGUGAUG	2941	CATCACA A GGCTAGCTACAACGA CAACACCT	11690
1449	UGUUGAUU G UGAUGCUA	2942	TAGCATCA GGCTAGCTACAACGA AATCAACA	11691
1452	UGAUUGUG A UGCUACUC	2943	GAGTAGCA GGCTAGCTACAACGA CACAATCA	11692
1454	AUUGUGAU G CUACUCUU	2944	AAGAGTAG GGCTAGCTACAACGA ATCACAAT	11693
1457	GUGAUGCU A CUCUUUGC	2945	GCAAAGAG GGCTAGCTACAACGA AGCATCAC	11694
1464	UACUCUUU G CCGGCGUU	2946	AACGCCGG GGCTAGCTACAACGA AAAGAGTA	11695
1468	CUUUGCCG G CGUUGACG	2947	CGTCAACG GGCTAGCTACAACGA CGGCAAAG	11696
1470	UUGCCGGC G UUGACGGG	2948	CCCGTCAA GGCTAGCTACAACGA GCCGGCAA	11697
1474	CGGCGUUG A CGGGGACA	2949	TGTCCCCG GGCTAGCTACAACGA CAACGCCG	11698
1480	UGACGGGG A CACCUACA	2950	TGTAGGTG GGCTAGCTACAACGA CCCCCTCA	11699
1482	ACGGGGAC A CCUACACG	2951	CGTGTAGG GGCTAGCTACAACGA GTCCCCGT	11700
1486	GGACACCU A CACGACAG	2952	CTGTCTGT GGCTAGCTACAACGA AGGTGTCC	11701
1488	ACACCUAC A CGACAGGG	2953	CCCTGTCT GGCTAGCTACAACGA GTAGTGTG	11702
1491	CCUACACG A CAGGGGGG	2954	CCCCCTGT GGCTAGCTACAACGA CGTGTAGG	11703
1500	CAGGGGGG G CGCAGGGC	2955	GCCCTGCG GGCTAGCTACAACGA CCCCCTGT	11704
1502	GGGGGGGC G CAGGGCCA	2956	TGGCCCTG GGCTAGCTACAACGA GCCCCCCC	11705
1507	GGCGCAGG G CCACACCA	2957	TGGTGTGG GGCTAGCTACAACGA CCTGCGCC	11706
1510	GCAGGGCC A CACCACUA	2958	TAGTGGTG GGCTAGCTACAACGA GGCCCTGC	11707
1512	AGGGGCCA A CCACUAGU	2959	ACTAGTGG GGCTAGCTACAACGA GTGGCCCT	11708
1515	GCCACACC A CUAGUAGG	2960	CCTACTAG GGCTAGCTACAACGA GGTGTGGC	11709
1519	CACCACUA G UAGGGUGG	2961	CCACCTTA GGCTAGCTACAACGA TAGTGTGT	11710
1524	CUAGUAGG G UGGCAUCC	2962	GGATGCCA GGCTAGCTACAACGA CCTACTAG	11711
1527	GUAGGGUG G CAUCCUCU	2963	GAGGGATG GGCTAGCTACAACGA CACCCTAC	11712
1529	AGGGUGGC A UCCUCUUU	2964	AAGAGGGA GGCTAGCTACAACGA GCCACCCT	11713
1539	CCCUCUUU A CAUCUGGA	2965	TCCAGATG GGCTAGCTACAACGA AAAGAGGG	11714
1541	CUCUUUAC A UCUGGAGC	2966	GCTCCAGA GGCTAGCTACAACGA GTAAAGAG	11715
1548	CAUCUGGA G CAUCUCAG	2967	CTGAGATG GGCTAGCTACAACGA TCCAGATG	11716
1550	UCUGGAGC A UCUCAGAA	2968	TTCTGAGA GGCTAGCTACAACGA GCTCCAGA	11717
1558	AUCUCAGA A UAUCAGC	2969	GCTGGATA GGCTAGCTACAACGA TCTGAGAT	11718
1560	CUCAGAAU A UCCAGCUU	2970	AAGCTGGA GGCTAGCTACAACGA ATTCTGAG	11719
1565	AAUAUCCA G CUUAUUAA	2971	TTAATAAG GGCTAGCTACAACGA TGGATATT	11720
1569	UCCAGCUU A UUAACACC	2972	GGTGTAA GGCTAGCTACAACGA AAGCTGGA	11721
1573	GCUUAUUA A CACCAACG	2973	CGTTGGTG GGCTAGCTACAACGA TAATAAGC	11722
1575	UUAUUAA A CCAACGGC	2974	GCCGTTGG GGCTAGCTACAACGA GTTAATAA	11723
1579	UAACACCA A CGGCAGCU	2975	AGCTGCCG GGCTAGCTACAACGA TGGTGTAA	11724
1582	CACCAACG G CAGCUGGC	2976	GCCAGCTG GGCTAGCTACAACGA CGTTGGTG	11725
1585	CAACGGCA G CUGGCACA	2977	TGTGCCAG GGCTAGCTACAACGA TGCCGTTG	11726
1589	GGCAGCUG G CACAUUAA	2978	TTAATGTG GGCTAGCTACAACGA CAGCTGCC	11727
1591	CAGCUGGC A CAUUAACA	2979	TGTAAATG GGCTAGCTACAACGA GCCAGCTG	11728

1593	GCUGGCAC A UUAACAGG	2980	CCTGTATA GGCTAGCTACAACGA GTGCCAGC	11729
1597	GCACAUUA A CAGGACUG	2981	CAGTCCTG GGCTAGCTACAACGA TAATGTGC	11730
1602	UUAACAGG A CUGCCCUG	2982	CAGGGCAG GGCTAGCTACAACGA CCTGTATA	11731
1605	ACAGGACU G CCCUGAAC	2983	GTTTCAGG GGCTAGCTACAACGA AGTCCTGT	11732
1612	UGCCCUGA A CUGCAAUG	2984	CATTGCAG GGCTAGCTACAACGA TCAGGGCA	11733
1615	CCUGAACU G CAAUGACU	2985	AGTCATTG GGCTAGCTACAACGA AGTTCAGG	11734
1618	GAACUGCA A UGACUCCC	2986	GGGAGTCA GGCTAGCTACAACGA TGCAGTTC	11735
1621	CUGCAAUG A CUCCCUCC	2987	GGAGGGAG GGCTAGCTACAACGA CATTGCAG	11736
1632	CCCUCCAA A CCGGGUUC	2988	GAACCCGG GGCTAGCTACAACGA TTGGAGGG	11737
1637	CAAACCGG G UUCAUUGC	2989	GCAATGAA GGCTAGCTACAACGA CCGGTTTG	11738
1641	CCGGGUUC A UGCUUGCA	2990	TGCAGCAA GGCTAGCTACAACGA GAACCCGG	11739
1644	GGUUCAUU G CUGCACUG	2991	CAGTGCAG GGCTAGCTACAACGA AATGAACC	11740
1647	UCAUUGCU G CACUGUUC	2992	GAACAGTG GGCTAGCTACAACGA AGCAATGA	11741
1649	AUUGCUGC A CUGUUCUA	2993	TAGAACAG GGCTAGCTACAACGA GCAGCAAT	11742
1652	GCUGCACU G UUCUAUGC	2994	GCATAGAA GGCTAGCTACAACGA AGTGCAGC	11743
1657	ACUGUUCU A UGCACACA	2995	TGTGTGCA GGCTAGCTACAACGA AGAACAGT	11744
1659	UGUUCUAU G CACACAGG	2996	CCTGTGTG GGCTAGCTACAACGA ATAGAACA	11745
1661	UUCUAUGC A CACAGGUU	2997	AACCTGTG GGCTAGCTACAACGA GCATAGAA	11746
1663	CUAUGCAC A CAGGUUCA	2998	TGAACCTG GGCTAGCTACAACGA GTGCATAG	11747
1667	GCACACAG G UUCAACUC	2999	GAGTTGAA GGCTAGCTACAACGA CTGTGTGC	11748
1672	CAGGUUCA A CUCGUCCG	3000	CGGACGAG GGCTAGCTACAACGA TGAACCTG	11749
1676	UUCAACUC G UCCGGAUG	3001	CATCCGGA GGCTAGCTACAACGA GAGTTGAA	11750
1682	UCGUCCGG A UGCCACA	3002	TGTGGGCA GGCTAGCTACAACGA CCGGACGA	11751
1684	GUCCGGAU G CCCACAGC	3003	GCTGTGGG GGCTAGCTACAACGA ATCCGGAC	11752
1688	GGAUGCCC A CAGCGCUU	3004	AAGCGCTG GGCTAGCTACAACGA GGGCATCC	11753
1691	UGCCCACA G CGCUUGGC	3005	GCCAAGCG GGCTAGCTACAACGA TGTGGGCA	11754
1693	CCACACAG G CUUGGCCA	3006	TGGCCAAG GGCTAGCTACAACGA GCTGTGGG	11755
1698	AGCGCUUG G CCAGCUGC	3007	GCAGCTGG GGCTAGCTACAACGA CAAGCGCT	11756
1702	CUUGGCCA G CUGCCGCU	3008	AGCGGCAG GGCTAGCTACAACGA TGGCCAAG	11757
1705	GGCCAGCU G CCGCUCCA	3009	TGGAGCGG GGCTAGCTACAACGA AGCTGGCC	11758
1708	CAGCUGCC G CUCCAUG	3010	CAATGGAG GGCTAGCTACAACGA GGCAGCTG	11759
1713	GCCGCUCC A UUGACAAG	3011	CTGTGCAA GGCTAGCTACAACGA GGAGCGGC	11760
1717	CUCCAUG A CAAGUUCG	3012	CGAATTG GGCTAGCTACAACGA CAATGGAG	11761
1721	AUUGACAA G UUCGCUCA	3013	TGAGCGAA GGCTAGCTACAACGA TTGTCAAT	11762
1725	ACAAGUUC G CUCAGGGG	3014	CCCCTGAG GGCTAGCTACAACGA GAACCTGT	11763
1733	GCUCAGGG G UGGGUUCC	3015	GGACCCCA GGCTAGCTACAACGA CCCTGAGC	11764
1738	GGGGUGGG G UCCUAUCA	3016	TGATAGGA GGCTAGCTACAACGA CCCACCCC	11765
1743	GGGGUCCU A UCACCUAC	3017	GTAGGTGA GGCTAGCTACAACGA AGGACCCC	11766
1746	GUCCUAUC A CCUACACC	3018	GGTGTAGG GGCTAGCTACAACGA GATAGGAC	11767
1750	UAUCACCU A CACCGAGG	3019	CCTCGGTG GGCTAGCTACAACGA AGGTGATA	11768
1752	UCACCUAC A CCGAGGGC	3020	GCCCTCGG GGCTAGCTACAACGA GTAGGTGA	11769
1759	CACCGAGG G CCACAACU	3021	AGTTGTGG GGCTAGCTACAACGA CCTCGGTG	11770
1762	CGAGGGCC A CAACUCGG	3022	CCGAGTTG GGCTAGCTACAACGA GGCCCTCG	11771
1765	GGGCCACA A CUCGGACC	3023	GGTCCGAG GGCTAGCTACAACGA TGTGGCCC	11772
1771	CAACUCGG A CCAGAGGC	3024	GCCTCTGG GGCTAGCTACAACGA CCGAGTTG	11773
1778	GACCAGAG G CCCUAUUG	3025	CAATAGGG GGCTAGCTACAACGA CTCTGGTC	11774
1783	GAGGCCCU A UUGCUGGC	3026	GCCAGCAA GGCTAGCTACAACGA AGGGCCTC	11775
1786	GCCCUAUU G CUGGCACU	3027	AGTGCCAG GGCTAGCTACAACGA AATAGGGC	11776
1790	UAUUGCUG G CACUACGC	3028	GCGTAGTG GGCTAGCTACAACGA CAGCAATA	11777
1792	UUGCUGGC A CUACGCAC	3029	GTGCGTAG GGCTAGCTACAACGA GCCAGCAA	11778
1795	CUGGCACU A CGCACCGC	3030	GCGGTGCG GGCTAGCTACAACGA AGTGCCAG	11779
1797	GGCACUAC G CACCGCGG	3031	CCGCGGTG GGCTAGCTACAACGA GTAGTGCC	11780
1799	CACUACGC A CCGCGGCC	3032	GGCCGCGG GGCTAGCTACAACGA GCGTAGTG	11781
1802	UACGCACC G CGGCCGUG	3033	CACGGCCG GGCTAGCTACAACGA GGTGCGTA	11782
1805	GCACCGCG G CCGUGUGG	3034	CCACACGG GGCTAGCTACAACGA CGCGGTGC	11783
1808	CCGCGGCC G UGUGUAU	3035	ATACCACA GGCTAGCTACAACGA GGCCGCGG	11784

1810	GCGGCCGU G UGUUAUCG	3036	CGATACCA GGCTAGCTACAACGA ACGGCCGC	11785
1813	GCCGUGUG G UAUCGUAC	3037	GTACGATA GGCTAGCTACAACGA CACACGGC	11786
1815	CGUGUGGU A UCGUACCC	3038	GGGTACGA GGCTAGCTACAACGA ACCACACG	11787
1818	GUGGUUAC G UACCCGCA	3039	TGCGGGTA GGCTAGCTACAACGA GATACCAC	11788
1820	GGUAUCGU A CCCGCAUC	3040	GATGCGGG GGCTAGCTACAACGA ACGATACC	11789
1824	UCGUACCC G CAUCGCAG	3041	CTGCGATG GGCTAGCTACAACGA GGGTACGA	11790
1826	GUACCCGC A UCGCAGGU	3042	ACCTGCGA GGCTAGCTACAACGA GCGGGTAC	11791
1829	CCCGCAUC G CAGGUUAG	3043	CATACCTG GGCTAGCTACAACGA GATGCGGG	11792
1833	CAUCGCAG G UAUGUGGU	3044	ACCACATA GGCTAGCTACAACGA CTGCGATG	11793
1835	UCGCAGGU A UGUGGUCC	3045	GGACCACA GGCTAGCTACAACGA ACCTGCGA	11794
1837	GCAGGUUAU G UGUUCCAG	3046	CTGGACCA GGCTAGCTACAACGA ATACCTGC	11795
1840	GGUAUGUG G UCCAGUGU	3047	ACACTGGA GGCTAGCTACAACGA CACATACC	11796
1845	GUGGUCCA G UGUUUGC	3048	GCAATACA GGCTAGCTACAACGA TGGACCAC	11797
1847	GGUCCAGU G UAUUGCUU	3049	AAGCAATA GGCTAGCTACAACGA ACTGGACC	11798
1849	UCCAGUGU A UUGCUUCA	3050	TGAAGCAA GGCTAGCTACAACGA AACTGGA	11799
1852	AGUGUAUU G CUUCACCC	3051	GGGTGAAG GGCTAGCTACAACGA AATACACT	11800
1857	AUUGCUUC A CCCAAGC	3052	GCTTGGGG GGCTAGCTACAACGA GAAGCAAT	11801
1864	CACCCCAA G CCCUGUUG	3053	CAACAGGG GGCTAGCTACAACGA TTGGGGTG	11802
1869	CAAGCCCU G UUGUGGUG	3054	CACCACAA GGCTAGCTACAACGA AGGGCTTG	11803
1872	GCCCUGUU G UGGUGGGG	3055	CCCCACCA GGCTAGCTACAACGA AACAGGGC	11804
1875	CUGUUGUG G UGGGGACG	3056	CGTCCCCA GGCTAGCTACAACGA CACAACAG	11805
1881	UGGUGGGG A CGACCGAC	3057	GTGCGTCG GGCTAGCTACAACGA CCCCACCA	11806
1884	UGGGGACG A CCGACCGU	3058	ACGGTCGG GGCTAGCTACAACGA CGTCCCCA	11807
1888	GACGACCG A CCGUUUCG	3059	CGAAACGG GGCTAGCTACAACGA CGGTGCTC	11808
1891	GACCGACC G UUUCGGCG	3060	CGCCGAAA GGCTAGCTACAACGA GGTCGGTC	11809
1897	CCGUUUCG G CGCCCCCA	3061	TGGGGGCG GGCTAGCTACAACGA CGAAACGG	11810
1899	GUUUCGGC G CCCCCACG	3062	CGTGGGGG GGCTAGCTACAACGA GCCGAAAC	11811
1905	GCGCCCCC A CGUAUAAC	3063	GTTATACG GGCTAGCTACAACGA GGGGGCGC	11812
1907	GCCCCCAG G UAUAACUG	3064	CAGTTATA GGCTAGCTACAACGA GTGGGGGC	11813
1909	CCCCACGU A UAACUGGG	3065	CCAGTTA GGCTAGCTACAACGA ACGTGGGG	11814
1912	CACGUUAU A CUGGGGGG	3066	CCCCCAG GGCTAGCTACAACGA TATACGTG	11815
1920	ACUGGGGG G CGAACGAG	3067	CTCGTTCG GGCTAGCTACAACGA CCCCAGT	11816
1924	GGGGGCGA A CGAGACGG	3068	CCGTCTCG GGCTAGCTACAACGA TCGCCCCC	11817
1929	CGAACGAG A CGGACGUG	3069	CACGTCCG GGCTAGCTACAACGA CTCGTTCG	11818
1933	CGAGACGG A CGUGCUGC	3070	GCAGCACG GGCTAGCTACAACGA CCGTCTCG	11819
1935	AGACGGAC G UGUGUCUC	3071	GAGCAGCA GGCTAGCTACAACGA GTCCGTCT	11820
1937	ACGGACGU G CUGCUCU	3072	AGGAGCAG GGCTAGCTACAACGA ACGTCCGT	11821
1940	GACGUGCU G CUCCUCAA	3073	TTGAGGAG GGCTAGCTACAACGA AGCAGTCT	11822
1948	GUCCUCA A CAACACGC	3074	GCGTGTG GGCTAGCTACAACGA TGAGGAGC	11823
1951	CCUCAACA A CACGCGGC	3075	GCCGCGTG GGCTAGCTACAACGA TGTGAGG	11824
1953	UCAACAAC A CGCGCCG	3076	CGGCCGCG GGCTAGCTACAACGA GTTGTGTA	11825
1955	AACAACAC G CGGCCGCC	3077	GGCGGCCG GGCTAGCTACAACGA GTGTTGTT	11826
1958	AACACGCG G CCGCCGCA	3078	TGCGGCCG GGCTAGCTACAACGA CGCGTGTT	11827
1961	ACGCGGCC G CCGCAAGG	3079	CCTTGCGG GGCTAGCTACAACGA GGCCGCGT	11828
1964	GCGCCGCC G CAAGGCAA	3080	TTGCCTTG GGCTAGCTACAACGA GCGGCCG	11829
1969	CCCGCAAG G CAACUGGU	3081	ACCAGTTG GGCTAGCTACAACGA CTTGCGGC	11830
1972	GCAAGGCA A CUGGUUCG	3082	CGAACCAG GGCTAGCTACAACGA TGCCTTGC	11831
1976	GGCAACUG G UUCGGCUG	3083	CAGCCGAA GGCTAGCTACAACGA CAGTTGCC	11832
1981	CUGGUUCG G CUGCACAU	3084	ATGTGCAG GGCTAGCTACAACGA CGAACCAG	11833
1984	GUUCGGCU G CACAUGGA	3085	TCCATGTG GGCTAGCTACAACGA AGCCGAAC	11834
1986	UCGGCUGC A CAUGGAUG	3086	CATCCATG GGCTAGCTACAACGA GCAGCCGA	11835
1988	GGCUGCAC A UGGAUGAA	3087	TTCATCCA GGCTAGCTACAACGA GTGCAGCC	11836
1992	GCACAUGG A UGAAUGGC	3088	GCCATTCA GGCTAGCTACAACGA CCATGTGC	11837
1996	AUGGAUGA A UGGCACUG	3089	CAGTGCCA GGCTAGCTACAACGA TCATCCAT	11838
1999	GAUGAUG G CACUGGGU	3090	ACCCAGTG GGCTAGCTACAACGA CATTCATC	11839
2001	UGAAUGGC A CUGGGUUC	3091	GAACCCAG GGCTAGCTACAACGA GCCATTCA	11840

2006	GGCACUGG G UUCACCAA	3092	TTGGTGAA GGCTAGCTACAACGA CCAGTGCC	11841
2010	CUGGGUUC A CCAAGACG	3093	CGTCTTGG GGCTAGCTACAACGA GAACCCAG	11842
2016	UCACCAAG A CGUGCGGG	3094	CCCGCAGG GGCTAGCTACAACGA CTTGGTGA	11843
2018	ACCAAGAC G UGCGGGGG	3095	CCCCCGCA GGCTAGCTACAACGA GTCTTGGT	11844
2020	CAAGACGU G CGGGGGCC	3096	GGCCCCCG GGCTAGCTACAACGA ACGTCTTG	11845
2026	GUGCGGGG G CCCCCCGU	3097	ACGGGGGG GGCTAGCTACAACGA CCCCCGAC	11846
2033	GGCCCCCG G UGCAACAU	3098	ATGTTGCA GGCTAGCTACAACGA GGGGGGCC	11847
2035	CCCCCGGU G CAACAUCG	3099	CGATGTTG GGCTAGCTACAACGA ACGGGGGG	11848
2038	CCCGUGCA A CAUCGGGG	3100	CCCCGATG GGCTAGCTACAACGA TGCACGGG	11849
2040	CGUGCAAC A UCGGGGGG	3101	CCCCCGCA GGCTAGCTACAACGA GTTGCACG	11850
2049	UCGGGGGG G CCGGUAAC	3102	GTTACCGG GGCTAGCTACAACGA CCCCCCGA	11851
2053	GGGGGCGG G UAACGACA	3103	TGTCGTTA GGCTAGCTACAACGA CGGCCCCC	11852
2056	GGCCGGUA A CGACACCU	3104	AGGTGTG GGCTAGCTACAACGA TACCGGCC	11853
2059	CGGUAACG A CACCUUAA	3105	TTAAGGTG GGCTAGCTACAACGA CGTTACCG	11854
2061	GUAACGAC A CCUUAACC	3106	GGTTAAGG GGCTAGCTACAACGA GTCGTTAC	11855
2067	ACACCUUA A CCUGCCCC	3107	GGGGCAGG GGCTAGCTACAACGA TAAGGTGT	11856
2071	CUUAACCU A CCCCACGG	3108	CCGTGGGG GGCTAGCTACAACGA AGGTAAAG	11857
2076	CCUGCCCC A CGGACUGC	3109	GCACTCCG GGCTAGCTACAACGA GGGGCAGG	11858
2080	CCCCACGG A CUGCUUCC	3110	GGAAGCAG GGCTAGCTACAACGA CCGTGGGG	11859
2083	CACGGACU G CUUCCGGA	3111	TCCGGAAG GGCTAGCTACAACGA AGTCCGTG	11860
2093	UUCCGGAA G CACCCCGA	3112	TCGGGGTG GGCTAGCTACAACGA TTCCGGAA	11861
2095	CCGGAAGC A CCCCAGAG	3113	CCTCGGGG GGCTAGCTACAACGA GCTTCCGG	11862
2103	ACCCCGAG G CCACUUA	3114	GTAAGTGG GGCTAGCTACAACGA CTCGGGGT	11863
2106	CCGAGGCC A CUUACGCA	3115	TGCGTAAG GGCTAGCTACAACGA GGCCTCGG	11864
2110	GGCCACUU A CGCAAAGU	3116	ACTTTGCG GGCTAGCTACAACGA AAGTGGCC	11865
2112	CCACUUA G CAAAGUGC	3117	GCACTTTG GGCTAGCTACAACGA GTAAGTGG	11866
2117	UACGCAAA G UGCGGUUC	3118	GAACCGCA GGCTAGCTACAACGA TTTGCGTA	11867
2119	CGCAAAGU G CGGUUCGG	3119	CCGAACCG GGCTAGCTACAACGA ACTTTGCG	11868
2122	AAAGUGCG G UUCGGGGC	3120	GCCCCGAA GGCTAGCTACAACGA CGCACTTT	11869
2129	GGUUCGGG G CCUUGGUU	3121	AACCAAGG GGCTAGCTACAACGA CCCGAACC	11870
2135	GGGCCUUG G UUAACACC	3122	GGTGTAA GGCTAGCTACAACGA CAAGGCCC	11871
2139	CUUGGUUA A CACCUAGA	3123	TCTAGGTG GGCTAGCTACAACGA TAACCAAG	11872
2141	UGGUUAAC A CCUAGAUG	3124	CATCTAGG GGCTAGCTACAACGA GTTAACCA	11873
2147	ACACCUAG A UGCAUAGU	3125	ACTATGCA GGCTAGCTACAACGA CTAGGTGT	11874
2149	ACCUAGAU G CAUAGUUG	3126	CAACTATG GGCTAGCTACAACGA ATCTAGGT	11875
2151	CUAGAUGC A UAGUUGAC	3127	GTCAACTA GGCTAGCTACAACGA GCATCTAG	11876
2154	GAUGCAUA G UGACUAC	3128	GTAGTCAA GGCTAGCTACAACGA TATGCATC	11877
2158	CAUAGUUG A CUACCCAU	3129	ATGGGTAG GGCTAGCTACAACGA CAACTATG	11878
2161	AGUUGACU A CCAUACA	3130	TGTATGGG GGCTAGCTACAACGA AGTCAACT	11879
2165	GACUACCC A UACAGGCU	3131	AGCCTGTA GGCTAGCTACAACGA GGGTAGTC	11880
2167	CUACCCAU A CAGGCUUU	3132	AAAGCCTG GGCTAGCTACAACGA ATGGGTAG	11881
2171	CCAUACAG G CUUUGGCA	3133	TGCCAAAG GGCTAGCTACAACGA CTGTATGG	11882
2177	AGGCUUUG G CACUACCC	3134	GGGTAGTG GGCTAGCTACAACGA CAAAGCCT	11883
2179	GCUUUGGC A CUACCCCU	3135	AGGGGTAG GGCTAGCTACAACGA GCCAAAGC	11884
2182	UUGGCACU A CCCCUGCA	3136	TGCAGGGG GGCTAGCTACAACGA AGTGCCAA	11885
2188	CUACCCCU G CACUGUCA	3137	TGACAGTG GGCTAGCTACAACGA AGGGGTAG	11886
2190	ACCCUGC A CUGUCAU	3138	ATTGACAG GGCTAGCTACAACGA GCAGGGGT	11887
2193	CCUGCACU G UCAAUUUU	3139	AAAATTGA GGCTAGCTACAACGA AGTGCAGG	11888
2197	CACUGUCA A UUUUCCA	3140	TGGAAAAA GGCTAGCTACAACGA TGACAGTG	11889
2205	AUUUUUCC A UCUUUAAG	3141	CTTAAAGA GGCTAGCTACAACGA GGAAAAAT	11890
2214	UCUUUAAG G UUAGGAUG	3142	CATCCTAA GGCTAGCTACAACGA CTTAAAGA	11891
2220	AGGUUAGG A UGUAGUG	3143	CACATACA GGCTAGCTACAACGA CTTAACCT	11892
2222	GUUAGGAU G UAUGUGG	3144	CCCACATA GGCTAGCTACAACGA ATCTAAC	11893
2224	UAGGAUGU A UGUGGGGG	3145	CCCCCACA GGCTAGCTACAACGA ACATCTTA	11894
2226	GGAUGUAU G UGGGGGGC	3146	GCCCCCCA GGCTAGCTACAACGA ATACATCC	11895
2233	UGUGGGGG G CGUGGAGC	3147	GCTCCACG GGCTAGCTACAACGA CCCCCACA	11896

2235	UGGGGGGC G UGGAGCAC	3148	GTGCTCCA GGCTAGCTACAACGA GCCCCCCA	11897
2240	GGCGUGGA G CACAGGCU	3149	AGCCTGTG GGCTAGCTACAACGA TCCACGCC	11898
2242	CGUGGAGC A CAGGCUCA	3150	TGAGCCTG GGCTAGCTACAACGA GCTCCACG	11899
2246	GAGCACAG G CUCACCGC	3151	GCGGTGAG GGCTAGCTACAACGA CTGTGCTC	11900
2250	ACAGGCUC A CCGCCGCA	3152	TGCGGCGG GGCTAGCTACAACGA GAGCCTGT	11901
2253	GGCUCACC G CCGCAUGC	3153	GCATGCGG GGCTAGCTACAACGA GGTGAGCC	11902
2256	UCACCGCC G CAUGCAAU	3154	ATTGTCATG GGCTAGCTACAACGA GGCGGTGA	11903
2258	ACCGCCGC A UGCAAUUG	3155	CAATTGCA GGCTAGCTACAACGA GCGGCGGT	11904
2260	CGCCGCAU G CAAUUGGA	3156	TCCAATTG GGCTAGCTACAACGA ATGCGGCG	11905
2263	CGCAUGCA A UUGGACUC	3157	GAGTCCAA GGCTAGCTACAACGA TGATGCG	11906
2268	GCAAUUGG A CUCGAGGA	3158	TCCTCGAG GGCTAGCTACAACGA CCAATTGC	11907
2279	CGAGGAGA G CGUUGUGA	3159	TCACAACG GGCTAGCTACAACGA TCTCCTCG	11908
2281	AGGAGAGC G UUGUGAUU	3160	AATCACAA GGCTAGCTACAACGA GCTCTCCT	11909
2284	AGAGCGUU G UGAUUUGG	3161	CCAAATCA GGCTAGCTACAACGA AACGCTCT	11910
2287	GCGUUGUG A UUUGGAGG	3162	CCTCCAAA GGCTAGCTACAACGA CACAACGC	11911
2296	UUUGGAGG A CAGGGACA	3163	TGTCCCTG GGCTAGCTACAACGA CCTCCAAA	11912
2302	GGACAGGG A CAGAUCAG	3164	CTGATCTG GGCTAGCTACAACGA CCCTGTCC	11913
2306	AGGGACAG A UCAGAGCU	3165	AGCTCTGA GGCTAGCTACAACGA CTGTCCCT	11914
2312	AGAUCAGA G CUCAGCCC	3166	GGGCTGAG GGCTAGCTACAACGA TCTGATCT	11915
2317	AGAGCUCA G CCCGCUGC	3167	GCAGCGGG GGCTAGCTACAACGA TGAGCTCT	11916
2321	CUCAGCCC G CUGCUGUU	3168	AACAGCAG GGCTAGCTACAACGA GGGCTGAG	11917
2324	AGCCCGCU G CUGUUGUC	3169	GACAACAG GGCTAGCTACAACGA AGCGGGCT	11918
2327	CCGCUGCU G UUGUCCAC	3170	GTGGACAA GGCTAGCTACAACGA AGCAGCGG	11919
2330	CUGCUGUU G UCCACUAC	3171	GTAGTGGA GGCTAGCTACAACGA AACAGCAG	11920
2334	UGUUGUCC A CUACAGAG	3172	CTCTGTAG GGCTAGCTACAACGA GGACAACA	11921
2337	UGUCCACU A CAGAGUGG	3173	CCACTCTG GGCTAGCTACAACGA AGTGGACA	11922
2342	ACUACAGA G UGGCAAAU	3174	ATTTGCCA GGCTAGCTACAACGA TCTGTAGT	11923
2345	ACAGAGUG G CAAAUAUCU	3175	AGTATTTG GGCTAGCTACAACGA CACTCTGT	11924
2349	AGUGGCAA A UACUGCCC	3176	GGGCAGTA GGCTAGCTACAACGA TTGCCACT	11925
2351	UGGCAAAU A CUGCCCUG	3177	CAGGGCAG GGCTAGCTACAACGA ATTTGCCA	11926
2354	CAAAUACU G CCUGCUC	3178	GAGCAGGG GGCTAGCTACAACGA AGTATTGT	11927
2359	ACUGCCCU G CUCCUJCA	3179	TGAAGGAG GGCTAGCTACAACGA AGGGCAGT	11928
2367	GCUCUUC A CCACCCUA	3180	TAGGGTGG GGCTAGCTACAACGA GAAGGAGC	11929
2370	CCUUCACC A CCCUACCG	3181	CGGTAGGG GGCTAGCTACAACGA GGTGAAGG	11930
2375	ACCACCCU A CCGGCUCU	3182	AGAGCCGG GGCTAGCTACAACGA AGGGTGGT	11931
2379	CCCUACCG G CUCUGUCC	3183	GGACAGAG GGCTAGCTACAACGA CGGTAGGG	11932
2384	CCGGCUCU G UCCACUGG	3184	CCAGTGGA GGCTAGCTACAACGA AGAGCCGG	11933
2388	CUCUGUCC A UGGUUUG	3185	CAAACCAG GGCTAGCTACAACGA GGACAGAG	11934
2392	GUCCACUG G UUUGAUCC	3186	GGATCAAA GGCTAGCTACAACGA CAGTGCAC	11935
2397	CUGGUUUG A UCCAUCUC	3187	GAGATGGA GGCTAGCTACAACGA CAAACCAG	11936
2401	UUUGAUCC A UCUCACC	3188	GGTGGA GA GGCTAGCTACAACGA GGATCAAA	11937
2407	CCAUCUCC A CCAGAACA	3189	TGTTCTGG GGCTAGCTACAACGA GGAGATGG	11938
2413	CCACCAGA A CAUCUGG	3190	CCACGATG GGCTAGCTACAACGA TCTGGTGG	11939
2415	ACCAGAAC A UCGUGGAC	3191	GTCCACGA GGCTAGCTACAACGA GTTCTGGT	11940
2418	AGAACAUC G UGGACGUG	3192	CACGTCCA GGCTAGCTACAACGA GATGTTCT	11941
2422	CAUCGUGG A CGUGCAAU	3193	ATTGCACG GGCTAGCTACAACGA CCACGATG	11942
2424	UCUGGAC G UGCAAUAC	3194	GTATTGCA GGCTAGCTACAACGA GTCCACGA	11943
2426	GUGGACGU G CAAUACCU	3195	AGGTATTG GGCTAGCTACAACGA ACGTCCAC	11944
2429	GACGUGCA A UACCUGUA	3196	TACAGGTA GGCTAGCTACAACGA TGCACGTC	11945
2431	CGUGCAAU A CCUGUACG	3197	CGTACAGG GGCTAGCTACAACGA ATTGCACG	11946
2435	CAAUACCU G UACGGUGU	3198	ACACCGTA GGCTAGCTACAACGA AGGTATTG	11947
2437	AUACCGU A CGGUGUAG	3199	CTACACCG GGCTAGCTACAACGA ACAGGTAT	11948
2440	CCUGUACG G UGUAGGGU	3200	ACCCTACA GGCTAGCTACAACGA CGTACAGG	11949
2442	UGUACGGU G UAGGGUCA	3201	TGACCCTA GGCTAGCTACAACGA ACCGTACA	11950
2447	GGUGUAGG G UCAGCGGU	3202	ACCGCTGA GGCTAGCTACAACGA CCTACACC	11951
2451	UAGGGUCA G CGGUUGUC	3203	GACAACCG GGCTAGCTACAACGA TGACCCTA	11952



2454	GGUCAGCG G UUGUCUCC	3204	GGAGACAA GGCTAGCTACAACGA CGCTGACC	11953
2457	CAGCGGUU G UCUCUUC	3205	GAAGGAGA GGCTAGCTACAACGA AACCGCTG	11954
2466	UCUCUUC G CAUAUCAA	3206	TTTGATTG GGCTAGCTACAACGA GAAGGAGA	11955
2469	CCUUCGCA A UCAAAUGG	3207	CCATTTGA GGCTAGCTACAACGA TGCGAAGG	11956
2474	GCAAUCAA A UGGGAGUA	3208	TACTCCCA GGCTAGCTACAACGA TTGATTGC	11957
2480	AAAUUGGA G UAUGUCCU	3209	AGGACATA GGCTAGCTACAACGA TCCCATTT	11958
2482	AUGGGAGU A UGUCCUGU	3210	ACAGGACA GGCTAGCTACAACGA ACTCCCAT	11959
2484	GGGAGUAU G UCCUGUUG	3211	CAACAGGA GGCTAGCTACAACGA ATACTCCC	11960
2489	UAUGUCCU G UUGCUUUU	3212	AAAAGCAA GGCTAGCTACAACGA AGGACATA	11961
2492	GUCCUGUU G CUUUUCCU	3213	AGGAAAAG GGCTAGCTACAACGA AACAGGAC	11962
2508	UUCUCCUG G CAGACGCG	3214	CGCGTCTG GGCTAGCTACAACGA CAGGAGAA	11963
2512	CCUGGCAG A CGCGCGCG	3215	CGCGCGCG GGCTAGCTACAACGA CTGCCAGG	11964
2514	UGGCAGAC G CGCGCUC	3216	GACGCGCG GGCTAGCTACAACGA GTCTGCCA	11965
2516	GCAGACGC G CGCGUCUG	3217	CAGACGCG GGCTAGCTACAACGA GCGTCTGC	11966
2518	AGACGCGC G CGUCUGUG	3218	CACAGACG GGCTAGCTACAACGA GCGCGTCT	11967
2520	ACGCGCGC G UCUGUGCC	3219	GGCACAGA GGCTAGCTACAACGA GCGCGCGT	11968
2524	GCGCGUCU G UGCCUGUU	3220	AACAGGCA GGCTAGCTACAACGA AGACGCGC	11969
2526	GCGUCUGU G CCUGUUUG	3221	CAAACAGG GGCTAGCTACAACGA ACAGACGC	11970
2530	CUGUGCCU G UUUGUGGA	3222	TCCACAAA GGCTAGCTACAACGA AGGCACAG	11971
2534	GCCUGUUU G UGGAUGAU	3223	ATCATCCA GGCTAGCTACAACGA AAACAGGC	11972
2538	GUUUGUGG A UGAUGCUG	3224	CAGCATCA GGCTAGCTACAACGA CCACAAC	11973
2541	UGUGGAUG A UGCUGUUG	3225	CAACAGCA GGCTAGCTACAACGA CATCCACA	11974
2543	UGGAUGAU G CUGUUGGU	3226	ACCAACAG GGCTAGCTACAACGA ATCATCCA	11975
2546	AUGAUGC G UUGGUAGC	3227	GCTACCAA GGCTAGCTACAACGA AGCATCAT	11976
2550	UGCUGUUG G UAGCCAG	3228	CTGGGCTA GGCTAGCTACAACGA CAACAGCA	11977
2553	UGUUGGUA G CCCAGGCC	3229	GGCTTGGG GGCTAGCTACAACGA TACCAACA	11978
2559	UAGCCAG G CCGAGGCU	3230	AGCCTCGG GGCTAGCTACAACGA CTGGGCTA	11979
2565	AGGCCAG G CUGCCCUA	3231	TAGGGCAG GGCTAGCTACAACGA CTCGGCCT	11980
2568	CCGAGGCU G CCUAGAG	3232	CTCTAGGG GGCTAGCTACAACGA AGCCTCGG	11981
2578	CCUAGAGA A CCUGGUGG	3233	CCACCAGG GGCTAGCTACAACGA TCTTAGG	11982
2583	AGAACCUG G UGUCCUC	3234	GAGGACCA GGCTAGCTACAACGA CAGGTTCT	11983
2586	ACCUGGUG G UCCUCAU	3235	ATTGAGGA GGCTAGCTACAACGA CACCAGGT	11984
2593	GGUCUCA A UGCAGCAU	3236	ATGCTGCA GGCTAGCTACAACGA TGAGGACC	11985
2595	UCCUCAU G CAGCAUCC	3237	GGATGCTG GGCTAGCTACAACGA ATTGAGGA	11986
2598	UCAUGCA G CAUCCUUG	3238	CAAGGATG GGCTAGCTACAACGA TGCATTGA	11987
2600	AAUGCAGC A UCCUUGGC	3239	GCCAAGGA GGCTAGCTACAACGA GCTGCATT	11988
2607	CAUCCUUG G CCGGAGUG	3240	CACTCCGG GGCTAGCTACAACGA CAAGGATG	11989
2613	UGGCCGGA G UGCAUGGC	3241	GCCATGCA GGCTAGCTACAACGA TCCGGCCA	11990
2615	GCCGGAGU G CAUGGCAU	3242	ATGCCATG GGCTAGCTACAACGA ACTCCGGC	11991
2617	CGGAGUGC A UGGCAUCC	3243	GGATGCCA GGCTAGCTACAACGA GCACTCCG	11992
2620	AGUGCAUG G CAUCCUCU	3244	AGAGGATG GGCTAGCTACAACGA CATGCACT	11993
2622	UGCAUGGC A UCCUCUCC	3245	GGAGAGGA GGCTAGCTACAACGA GCCATGCA	11994
2637	CCUUCUC G UGUUCUUC	3246	GAAGAACA GGCTAGCTACAACGA GAGGAAGG	11995
2639	UUCUCUGU G UUCUUCUG	3247	CAGAAGAA GGCTAGCTACAACGA ACGAGGAA	11996
2647	GUUCUUCU G UGCUGCCU	3248	AGGCAGCA GGCTAGCTACAACGA AGAAGAAC	11997
2649	UCUUCUGU G CUGCCUGG	3249	CCAGGCAG GGCTAGCTACAACGA ACAGAAGA	11998
2652	UCUGUGCU G CCUGGUAC	3250	GTACCAGG GGCTAGCTACAACGA AGCACAGA	11999
2657	GCUGCCUG G UACAUCAA	3251	TTGATGTA GGCTAGCTACAACGA CAGGCAGC	12000
2659	UGCCUGGU A CAUCAAAG	3252	CTTTGATG GGCTAGCTACAACGA ACCAGGCA	12001
2661	CCUGGUAC A UCAAAGGC	3253	GCCTTTGA GGCTAGCTACAACGA GTACCAGG	12002
2668	CAUCAAA G CAAGCUGG	3254	CCAGCTTG GGCTAGCTACAACGA CTTTGATG	12003
2672	AAAGGCAA G CUGGUCCC	3255	GGGACCAG GGCTAGCTACAACGA TTGCCTTT	12004
2676	GCAAGCUG G UCCCUGGG	3256	CCCAGGGA GGCTAGCTACAACGA CAGCTTGC	12005
2685	UCCCUGGG G CGGCAUUA	3257	ATATGCCG GGCTAGCTACAACGA CCCAGGGA	12006
2688	CUGGGGCG G CAUAUGCU	3258	AGCATATG GGCTAGCTACAACGA CGCCCCAG	12007
2690	GGGGCGGC A UAUGCUCU	3259	AGAGCATA GGCTAGCTACAACGA GCGCCCC	12008



2692	GGCGGCAU A UGCUCUCU	3260	AGAGAGCA GGCTAGCTACAACGA ATGCCGCC	12009
2694	CGGCAUUAU G CUCUCUAC	3261	GTAGAGAG GGCTAGCTACAACGA ATATGCCG	12010
2701	UGCUCUCU A CGGCGUAU	3262	ATACGCCG GGCTAGCTACAACGA AGAGAGCA	12011
2704	UCUCUACG G CGUAUGGC	3263	GCCATACG GGCTAGCTACAACGA CGTAGAGA	12012
2706	UCUACGGC G UAUGGCCG	3264	CGGCCATA GGCTAGCTACAACGA GCCGTAGA	12013
2708	UACGGCGU A UGGCCGCU	3265	AGCGGCCA GGCTAGCTACAACGA ACGCCGTA	12014
2711	GGCGUAUG G CCGCUACU	3266	AGTAGCGG GGCTAGCTACAACGA CACACGCC	12015
2714	GUAUGGCC G CUACUCCU	3267	AGGAGTAG GGCTAGCTACAACGA GGCCATAC	12016
2717	UGGCCGCU A CUCCUGCU	3268	AGCAGGAG GGCTAGCTACAACGA AGCGGCCA	12017
2723	CUACUCCU G CUCCUGCU	3269	AGCAGGAG GGCTAGCTACAACGA AGGAGTAG	12018
2729	CUGCUCCU G CUGGCGUU	3270	AACGCCAG GGCTAGCTACAACGA AGGAGCAG	12019
2733	UCCUGCUG G CGUUAACA	3271	TGGTAACG GGCTAGCTACAACGA CAGCAGGA	12020
2735	CUGCUGGC G UUACCACC	3272	GGTGGTAA GGCTAGCTACAACGA GCCAGCAG	12021
2738	CUGGCGUU A CCACCACG	3273	CGTGGTGG GGCTAGCTACAACGA AACGCCAG	12022
2741	GCGUUAAC A CCACGGGC	3274	GCCCCGTG GGCTAGCTACAACGA GGTAACGC	12023
2744	UUACCACC A CGGGCGUA	3275	TACGCCCG GGCTAGCTACAACGA GGTGGTAA	12024
2748	CACCACGG G CGUACGCC	3276	GGCGTACG GGCTAGCTACAACGA CCGTGGTG	12025
2750	CCACGGGC G UACGCCAU	3277	ATGGCGTA GGCTAGCTACAACGA GCCCCGTG	12026
2752	ACGGGCGU A CGCCAUGG	3278	CCATGGCG GGCTAGCTACAACGA ACGCCCCG	12027
2754	GGGCGUAC G CCAUGGAC	3279	GTCCATTG GGCTAGCTACAACGA GTACGCCG	12028
2757	CGUACGCC A UGACCCG	3280	CCGGTCCA GGCTAGCTACAACGA GCGGTACG	12029
2761	CGCCAUGG A CCGGGAGA	3281	TCTCCCGG GGCTAGCTACAACGA CCATGGCG	12030
2769	ACCGGGAG A UGGCCGCA	3282	TGCGGCCA GGCTAGCTACAACGA CTCCCGGT	12031
2772	GGGAGAUG G CCGCAUCG	3283	CGATGCGG GGCTAGCTACAACGA CATCTCCC	12032
2775	AGAUGGCC G CAUCGUGC	3284	GCACGATG GGCTAGCTACAACGA GGCCATCT	12033
2777	AUGGCCGC A UCGUGCGG	3285	CCGCACGA GGCTAGCTACAACGA GCGGCCAT	12034
2780	GCCGCAUC G UGCGGAGG	3286	CCTCCGCA GGCTAGCTACAACGA GATGCGGC	12035
2782	CGCAUCGU G CGGAGGCG	3287	CGCCTCCG GGCTAGCTACAACGA ACGTAGCG	12036
2788	GUGCGGAG G CGUGGUU	3288	AAACCACG GGCTAGCTACAACGA CTCGCAC	12037
2790	GCGGAGGC G UGUUUUU	3289	AAAAACCA GGCTAGCTACAACGA GCCTCCGC	12038
2793	GAGGCGUG G UUUUUGUA	3290	TACAAAAA GGCTAGCTACAACGA CACGCCTC	12039
2799	UGGUUUUU G UAGGUCUA	3291	TAGACCTA GGCTAGCTACAACGA AAAAACCA	12040
2803	UUUUGUAG G UCUAGCAC	3292	GTGCTAGA GGCTAGCTACAACGA CTACAAAA	12041
2808	UAGGUCUA G CACUCUUG	3293	CAAGAGTG GGCTAGCTACAACGA TAGACCTA	12042
2810	GGUCUAGC A CUCUUGAC	3294	GTCAAGAG GGCTAGCTACAACGA GCTAGACC	12043
2817	CACUCUUG A CCUUGUCA	3295	TGACAAGG GGCTAGCTACAACGA CAAGAGTG	12044
2822	UUGACCUU G UCACCAUA	3296	TATGGTGA GGCTAGCTACAACGA AAGGTCAA	12045
2825	ACCUUGUC A CCAUACUA	3297	TAGTATGG GGCTAGCTACAACGA GACAAGGT	12046
2828	UUGUCACC A UACUACAA	3298	TTGTAGTA GGCTAGCTACAACGA GGTGACAA	12047
2830	GUCACCAU A CUACAAAG	3299	CTTTGTAG GGCTAGCTACAACGA ATGGTGAC	12048
2833	ACCAUACU A CAAAGUGU	3300	ACACTTTG GGCTAGCTACAACGA AGTATGGT	12049
2838	ACUACAAA G UGUUCCUC	3301	GAGGAACA GGCTAGCTACAACGA TTTGTAGT	12050
2840	UACAAAGU G UUCUCGCG	3302	GCGAGGAA GGCTAGCTACAACGA ACTTTGTA	12051
2847	UGUUCUCU G CUAGGCUC	3303	GAGCCTAG GGCTAGCTACAACGA GAGGAACA	12052
2852	CUCGCUAG G CUCAUAUG	3304	CATATGAG GGCTAGCTACAACGA CTAGCGAG	12053
2856	CUAGGCUC A UAUGGUGG	3305	CCACCATA GGCTAGCTACAACGA GAGCCTAG	12054
2858	AGGCUCAU A UGGUGGUU	3306	AACCACCA GGCTAGCTACAACGA ATGAGCCT	12055
2861	CUCAUAUG G UGGUUGCA	3307	TGCAACCA GGCTAGCTACAACGA CATATGAG	12056
2864	AUAUGGUG G UUGCAUA	3308	TATTGCAA GGCTAGCTACAACGA CACCATAT	12057
2867	UGGUGGUU G CAAUACCU	3309	AGGTATTG GGCTAGCTACAACGA AACCACCA	12058
2870	UGGUUGCA A UACCUUAU	3310	ATAAGGTA GGCTAGCTACAACGA TGCAACCA	12059
2872	GUUGCAAU A CCUUAUCA	3311	TGATAAGG GGCTAGCTACAACGA ATTGCAAC	12060
2877	AAUACCUU A UCACCAGA	3312	TCTGGTGA GGCTAGCTACAACGA AAGGTATT	12061
2880	ACCUUAUC A CCAGAGCC	3313	GGCTCTGG GGCTAGCTACAACGA GATAAGGT	12062
2886	UCACCAGA G CCGAGGCG	3314	CGCCTCGG GGCTAGCTACAACGA TCTGGTGA	12063
2892	GAGCCGAG G CGCAGUUG	3315	CAACTGCG GGCTAGCTACAACGA CTCGGCTC	12064

2894	GCCGAGGC G CAGUUGCA	3316	TGCAACTG GGCTAGCTACAACGA GCCTCGGC	12065
2897	GAGGCGCA G UUGCAAGU	3317	ACTTGCAA GGCTAGCTACAACGA TGCGCCTC	12066
2900	GCGCAGUU G CAAGUGUG	3318	CACACTTG GGCTAGCTACAACGA AACTGCGC	12067
2904	AGUUGCAA G UGUGGAUC	3319	GATCCACA GGCTAGCTACAACGA TTGCAACT	12068
2906	UUGCAAGU G UGGAUCCC	3320	GGGATCCA GGCTAGCTACAACGA ACTTGCAA	12069
2910	AAGUGUGG A UCCCCCCC	3321	GGGGGGGA GGCTAGCTACAACGA CCACACTT	12070
2923	CCCCCUCA A CGUUCGGG	3322	CCCGAACG GGCTAGCTACAACGA TGAGGGGG	12071
2925	CCCUCAAC G UUCGGGGG	3323	CCCCCGAA GGCTAGCTACAACGA GTTGAGGG	12072
2936	CGGGGGGG G CGCGGUGC	3324	GCACCGCG GGCTAGCTACAACGA CCCCCCGG	12073
2938	GGGGGGGC G CGUGCCA	3325	TGGCACC G GGCTAGCTACAACGA GCCCCCCC	12074
2941	GGGGCGCG G UGCCAUCA	3326	TGATGCA GGCTAGCTACAACGA CGCGCCCC	12075
2943	GGCGCGGU G CCAUCAUU	3327	AATGATGG GGCTAGCTACAACGA ACCGCGCC	12076
2946	GCGGUGCC A UCAUUCUC	3328	GAGAATGA GGCTAGCTACAACGA GGCACCGC	12077
2949	GUGCCAUC A UUCUCCUC	3329	GAGGAGAA GGCTAGCTACAACGA GATGGCAC	12078
2958	UUCUCCUC A CGUGUGUG	3330	CACACACG GGCTAGCTACAACGA GAGGAGAA	12079
2960	CUCCUCAC G UGUGUGGU	3331	ACCACACA GGCTAGCTACAACGA GTGAGGAG	12080
2962	CCUCACGU G UGUGGUCC	3332	GGACCACA GGCTAGCTACAACGA ACGTGAGG	12081
2964	UCACGUGU G UGUCCAC	3333	GTGGACCA GGCTAGCTACAACGA ACACGTGA	12082
2967	CGUGUGUG G UCCACCA	3334	TGGGTGGA GGCTAGCTACAACGA CACACACG	12083
2971	UGUGGUCC A CCCAGAGC	3335	GCTCTGGG GGCTAGCTACAACGA GGACCACA	12084
2978	CACCCAGA G CUAUUCUU	3336	AAGATTAG GGCTAGCTACAACGA TCTGGGTG	12085
2982	CAGAGCUA A UCUIUGAC	3337	GTCAAAGA GGCTAGCTACAACGA TAGCTCTG	12086
2989	AAUCUUUG A CAUCACCA	3338	TGGTGATG GGCTAGCTACAACGA CAAAGATT	12087
2991	UCUIUGAC A UCACCAA	3339	TTTGGTGA GGCTAGCTACAACGA GTCAAAGA	12088
2994	UUGACAUC A CCAAAAUU	3340	AATTTTGG GGCTAGCTACAACGA GATGTCAA	12089
3000	UCACCAA A UUAUGCUC	3341	GAGCATAA GGCTAGCTACAACGA TTTGGTGA	12090
3003	CCAAAUU A UGCUCGCC	3342	GGCGAGCA GGCTAGCTACAACGA AATTTTGG	12091
3005	AAAAUUU G CUCGCCAU	3343	ATGGCGAG GGCTAGCTACAACGA ATAATTTT	12092
3009	UUAUGCUC G CCAUACUC	3344	GAGTATGG GGCTAGCTACAACGA GAGCATAA	12093
3012	UGCUCGCC A UACUCGGC	3345	GCCGAGTA GGCTAGCTACAACGA GGCGAGCA	12094
3014	CUCGCCAU A CUCGGCCC	3346	GGGCGGAG GGCTAGCTACAACGA ATGGCGAG	12095
3019	CAUACUCG G CCCGCUCA	3347	TGAGCGGG GGCTAGCTACAACGA CGAGTATG	12096
3023	CUCGGCCC G CUCAUGGU	3348	ACCATGAG GGCTAGCTACAACGA GGGCCGAG	12097
3027	GCCCGCUC A UGGUGCUC	3349	GAGCACCA GGCTAGCTACAACGA GAGCGGGC	12098
3030	CGCUAUG G UGCUCAG	3350	CTGGAGCA GGCTAGCTACAACGA CATGAGCG	12099
3032	CUCAUGGU G CUCCAGGC	3351	GCCTGGAG GGCTAGCTACAACGA ACCATGAG	12100
3039	UGCUCAG G CUGGUUAU	3352	TATACCAG GGCTAGCTACAACGA CTGGAGCA	12101
3043	CCAGGCUG G UAUAGCAA	3353	TTGCTATA GGCTAGCTACAACGA CAGCCTGG	12102
3045	AGGCUGGU A UAGCAAAA	3354	TTTTGCTA GGCTAGCTACAACGA ACCAGCCT	12103
3048	CUGGUUAU G CAAAAGUG	3355	CACTTTTG GGCTAGCTACAACGA TATACCAG	12104
3054	UAGCAAAA G UGCCGGAC	3356	GTCCGGCA GGCTAGCTACAACGA TTTTGCTA	12105
3056	GCAAAAGU G CCGGACUU	3357	AAGTCCGG GGCTAGCTACAACGA ACTTTTGC	12106
3061	AGUGCCGG A CUUUGUC	3358	GCACAAAG GGCTAGCTACAACGA CCGGCACT	12107
3066	CGGACUUU G UGCGGGCU	3359	AGCCCGCA GGCTAGCTACAACGA AAAGTCCG	12108
3068	GACUUUGU G CGGGCUCA	3360	TGAGCCCC GGCTAGCTACAACGA ACAAGTCT	12109
3072	UUGUGCGG G CUCAAGGG	3361	CCCTTGAG GGCTAGCTACAACGA CCGCACAA	12110
3081	CUCAAGGG G UCAUCCGU	3362	ACGGATGA GGCTAGCTACAACGA CCCTTGAG	12111
3084	AAGGGGUC A UCCGUGAA	3363	TTCACGGA GGCTAGCTACAACGA GACCCCTT	12112
3088	GGUCAUCC G UGAAUGCA	3364	TGCATTCA GGCTAGCTACAACGA GGATGACC	12113
3092	AUCCGUGA A UGCAUUUU	3365	AAAATGCA GGCTAGCTACAACGA TCACGGAT	12114
3094	CCGUGAAU G CAUUUUGG	3366	CCAAAATG GGCTAGCTACAACGA ATTACCGG	12115
3096	GUGAAUUC A UUUUGGUG	3367	CACCAAAA GGCTAGCTACAACGA GCATTTCAC	12116
3102	GCAUUUUG G UGCGGAAA	3368	TTTCCGCA GGCTAGCTACAACGA CAAAATGC	12117
3104	AUUUUGGU G CGGAAAGU	3369	ACTTTCCG GGCTAGCTACAACGA CAAAATAT	12118
3111	UGCGGAAA G UCGGUGGG	3370	CCCACCGA GGCTAGCTACAACGA TTTCCGCA	12119
3115	GAAAGUCG G UGGGGGGC	3371	GCCCCCA GGCTAGCTACAACGA CGACTTTC	12120

3122	GGUGGGGG G CAAUAUGU	3372	ACATATTG GGCTAGCTACAACGA CCCCCACC	12121
3125	GGGGGGCA A UAUGUCCA	3373	TGGACATA GGCTAGCTACAACGA TGCCCCCC	12122
3127	GGGGCAAU A UGUCCAA	3374	TTTGGACA GGCTAGCTACAACGA ATATGCCC	12123
3129	GGCAUAU G UCCAAUG	3375	CATTTGGA GGCTAGCTACAACGA ATATGCCC	12124
3135	AUGUCCAA A UGGCCUUC	3376	GAAGGCCA GGCTAGCTACAACGA TTGGACAT	12125
3138	UCCAAUG G CCUUAUG	3377	CATGAAGG GGCTAGCTACAACGA CATTTGGA	12126
3144	UGGCCUUC A UGAAGUUG	3378	CAACTTCA GGCTAGCTACAACGA GAAGGCCA	12127
3149	UUAUGAA G UUGGCCGA	3379	TCGGCCAA GGCTAGCTACAACGA TTCATGAA	12128
3153	UGAAGUUG G CCGAAUUG	3380	CAATTCGG GGCTAGCTACAACGA CAACTTCA	12129
3158	UUGGCCGA A UUGAAAGG	3381	CCTTTCAA GGCTAGCTACAACGA TCGGCCAA	12130
3166	AUUGAAAG G UACGUCCG	3382	CGGACGTA GGCTAGCTACAACGA CTTTCAAT	12131
3168	UGAAAGGU A CGUCCGUC	3383	GACGGACG GGCTAGCTACAACGA ACCTTTCA	12132
3170	AAAGGUAC G UCCGUCUA	3384	TAGACGGA GGCTAGCTACAACGA GTACCTTT	12133
3174	GUACGUCC G UCUAUGAC	3385	GTCATAGA GGCTAGCTACAACGA GGACGTAC	12134
3178	GUCCGUCU A UGACCACC	3386	GGTGGTCA GGCTAGCTACAACGA AGACGGAC	12135
3181	CGUCUAUG A CCACCUCA	3387	TGAGGTGG GGCTAGCTACAACGA CATAGACG	12136
3184	CUAUGACC A CCUCACUC	3388	GAGTGAGG GGCTAGCTACAACGA GGTCTATG	12137
3189	ACCACCUC A CUCCACUG	3389	CAGTGGAG GGCTAGCTACAACGA GAGGTGGT	12138
3194	CUCACUCC A CUGCAGGA	3390	TCCTGCAG GGCTAGCTACAACGA GGAGTGAG	12139
3197	ACUCCACU G CAGGACUG	3391	CAGTCTCT GGCTAGCTACAACGA AGTGGAGT	12140
3202	ACUGCAGG A CUGGGCCC	3392	GGGCCCAG GGCTAGCTACAACGA CTTGCAGT	12141
3207	AGGACUGG G CCCACACA	3393	TGTGTGGG GGCTAGCTACAACGA CCAGTCTT	12142
3211	CUGGGCCC A CACAGGUC	3394	GACCTGTG GGCTAGCTACAACGA GGGCCCAG	12143
3213	GGGCCCAC A CAGGUCUA	3395	TAGACCTG GGCTAGCTACAACGA GTGGGCCC	12144
3217	CCACACAG G UCUACGAG	3396	CTCGTAGA GGCTAGCTACAACGA CTGTGTGG	12145
3221	ACAGGUCU A CGAGACCU	3397	AGGTCTCG GGCTAGCTACAACGA AGACCTGT	12146
3226	UCUACGAG A CCUGGCGG	3398	CCGCCAGG GGCTAGCTACAACGA CTCGTAGA	12147
3231	GAGACCUG G CGGUAGCG	3399	CGCTACCG GGCTAGCTACAACGA CAGGTCTC	12148
3234	ACUGGGCG G UAGCGGUC	3400	GACCGCTA GGCTAGCTACAACGA CGCCAGGT	12149
3237	UGGCGGUA G CGGUCCGAG	3401	CTCGACCG GGCTAGCTACAACGA TACCGCCA	12150
3240	CGGUAGCG G UCGAGCCC	3402	GGGCTCGA GGCTAGCTACAACGA CGCTACCG	12151
3245	GCGGUCCA G CCCGUCGU	3403	ACGACGGG GGCTAGCTACAACGA TCGACCGC	12152
3249	UCGAGCCC G UCGUCUUC	3404	GAAGACGA GGCTAGCTACAACGA GGGCTCGA	12153
3252	AGCCCGUC G UCUUCUCC	3405	GGAGAAGA GGCTAGCTACAACGA GACGGGCT	12154
3262	CUUCUCCG A CAUGGAAA	3406	TTCCATG GGCTAGCTACAACGA CGGAGAAG	12155
3264	UCUCCGAC A UGGAAAUC	3407	GATTTCCA GGCTAGCTACAACGA GTCGGAGA	12156
3270	ACAUGGAA A UCAAGAUC	3408	GATCTTGA GGCTAGCTACAACGA TTCCATGT	12157
3276	AAAUCAAG A UCAUACCC	3409	GGTGATGA GGCTAGCTACAACGA CTTGATT	12158
3279	UCAAGAUC A UCACCGG	3410	CCAGGTGA GGCTAGCTACAACGA GATCTTGA	12159
3282	AGAUCAUC A CCUGGGGG	3411	CCCCCAGG GGCTAGCTACAACGA GATGATCT	12160
3295	GGGGGGAG A CACCGCGG	3412	CCGCGGTG GGCTAGCTACAACGA CTCCCCC	12161
3297	GGGGAGAC A CCGCGCGG	3413	CGCGCGG GGCTAGCTACAACGA GTCTCCCC	12162
3300	GAGACACC G CGGCGUGU	3414	ACACGCCG GGCTAGCTACAACGA GGTGTCTC	12163
3303	ACACCGCG G CGUGUGGG	3415	CCCACACG GGCTAGCTACAACGA CGCGGTGT	12164
3305	ACCGCGGC G UGUGGGGA	3416	TCCCCACA GGCTAGCTACAACGA ACCGCGGT	12165
3307	CGCGGCGU G UGGGGACA	3417	TGTCCTCA GGCTAGCTACAACGA GCGCGCG	12166
3313	GUGUGGGG A CAUCAUUA	3418	TAATGATG GGCTAGCTACAACGA CCCCACAC	12167
3315	GUGGGGAC A UCAUUAUG	3419	CATAATGA GGCTAGCTACAACGA GTCCCCAC	12168
3318	GGGACAUC A UUAUGGGU	3420	ACCCATAA GGCTAGCTACAACGA GATGTCCC	12169
3321	ACAUCAUU A UGGGUCUA	3421	TAGACCCA GGCTAGCTACAACGA AATGATGT	12170
3325	CAUUAUGG G UCUACCUG	3422	CAGGTAGA GGCTAGCTACAACGA CCATAATG	12171
3329	AUGGGUCU A CCUGUCUC	3423	GAGACAGG GGCTAGCTACAACGA AGACCCAT	12172
3333	GUCUACCU G UCUCGCGC	3424	GGCGGAGA GGCTAGCTACAACGA AGGTAGAC	12173
3339	CUGUCUCC G CCCGAAGG	3425	CCTTCGGG GGCTAGCTACAACGA GGAGACAG	12174
3357	GGAGGGAG A UACUCCUA	3426	TAGAGTA GGCTAGCTACAACGA CTCCCTCC	12175
3359	AGGGAGAU A CUCCUAGG	3427	CCTAGGAG GGCTAGCTACAACGA ATCTCCCT	12176

3368	CUCCUAGG A CCAGCCGA	3428	TCGGCTGG GGCTAGCTACAACGA CTTAGGAG	12177
3372	UAGGACCA G CCGACAGU	3429	ACTGTGGG GGCTAGCTACAACGA TGGTCTTA	12178
3376	ACCAGCCG A CAGUCUUG	3430	CAAGACTG GGCTAGCTACAACGA CGGCTGGT	12179
3379	AGCCGACA G UCUUGAGG	3431	CCTCAAGA GGCTAGCTACAACGA TGTGGGCT	12180
3389	CUUGAGGG G CAGGGGUG	3432	CACCCCTG GGCTAGCTACAACGA CCCTCAAG	12181
3395	GGGCAGGG G UGGCGACU	3433	AGTCGCCA GGCTAGCTACAACGA CCCTGCCC	12182
3398	CAGGGGUG G CGACUCCU	3434	AGGAGTCG GGCTAGCTACAACGA CACCCCTG	12183
3401	GGGUGGCG A CUCCUCGC	3435	GCGAGGAG GGCTAGCTACAACGA CGCCACCC	12184
3408	GACUCCUC G CGCCCAU	3436	AATGGGCG GGCTAGCTACAACGA GAGGAGTC	12185
3410	CUCCUCGC G CCCAUUAC	3437	GTAATGGG GGCTAGCTACAACGA GCGGAGAG	12186
3414	UCGCGCCC A UUACGGCC	3438	GGCCGTAA GGCTAGCTACAACGA GGGCGCGA	12187
3417	CGCCCAU A CGGCCUAC	3439	GTAGGCCG GGCTAGCTACAACGA AATGGGCG	12188
3420	CCAUAACG G CCUACUCC	3440	GGAGTAGG GGCTAGCTACAACGA CGTAATGG	12189
3424	UACGGCCU A CUCCCAAC	3441	GTTGGGAG GGCTAGCTACAACGA AGGCCGTA	12190
3431	UACUCCA A CAGACGCG	3442	CGCGTCTG GGCTAGCTACAACGA TGGGAGTA	12191
3435	CCCAACAG A CGCGGGGC	3443	GCCCCGCG GGCTAGCTACAACGA CTGTTGGG	12192
3437	CAACAGAC G CGGGGCCU	3444	AGGCCCGG GGCTAGCTACAACGA GTCTGTTG	12193
3442	GACGCGGG G CGUGUUG	3445	CAAACAGG GGCTAGCTACAACGA CCCGCGTC	12194
3446	CGGGGCCU G UUUGGCG	3446	CAGCCAAA GGCTAGCTACAACGA AGGCCCGG	12195
3451	CCUGUUG G CUGCAUUA	3447	TAATGCAG GGCTAGCTACAACGA CAAACAGG	12196
3454	GUUUGGCU G CAUUAUCA	3448	TGATAATG GGCTAGCTACAACGA AGCCAAAC	12197
3456	UUGGCGUC A UUAUACCC	3449	GGTGATAA GGCTAGCTACAACGA GCAGCCAA	12198
3459	GCUGCAU A UCACCAGC	3450	GCTGGTGA GGCTAGCTACAACGA AATGCAGC	12199
3462	GCAUUAUC A CCAGCCUC	3451	GAGGCTGG GGCTAGCTACAACGA GATAATGC	12200
3466	UAUACCA G CCUCACGG	3452	CCGTGAGG GGCTAGCTACAACGA TGGTGATA	12201
3471	CCAGCCUC A CGGGCCGG	3453	CCGGCCCG GGCTAGCTACAACGA GAGGCTGG	12202
3475	CCUCACGG G CCGGGACA	3454	TGTCCCGG GGCTAGCTACAACGA CCGTGAGG	12203
3481	GGGCCGGG A CAAGAACC	3455	GGTTCTTG GGCTAGCTACAACGA CCCGGCCC	12204
3487	GGACAAGA A CCAAGUCG	3456	CGACTTGG GGCTAGCTACAACGA TCTTGTCC	12205
3492	AGAACCAG G UCGAGGGG	3457	CCCCTCGA GGCTAGCTACAACGA TTGGTTCT	12206
3504	AGGGGGAA G UUCAAGUG	3458	CACTTGAA GGCTAGCTACAACGA TTCCCCCT	12207
3510	AAGUCAA G UGGUJUCC	3459	GGAAACCA GGCTAGCTACAACGA TTGAACCT	12208
3513	UUCAAGUG G UUUCCACC	3460	GGTGAAA GGCTAGCTACAACGA CACTTGAA	12209
3519	UGGUUCC A CCGGACG	3461	CGTCGCGG GGCTAGCTACAACGA GGAACCA	12210
3522	UUUCCACC G CGACGAG	3462	CTGCGTCG GGCTAGCTACAACGA GGTGGAAA	12211
3525	CCACCGCG A CGCAGUCU	3463	AGACTGCG GGCTAGCTACAACGA CGCGGTGG	12212
3527	ACCGCGAC G CAGUCUUU	3464	AAAGACTG GGCTAGCTACAACGA GTCGCGGT	12213
3530	GCGACGCA G UCUUCCU	3465	AGGAAAGA GGCTAGCTACAACGA TGCGTCGC	12214
3540	CUUCCUA G CGACCGUC	3466	GCAGGTCG GGCTAGCTACAACGA TAGGAAAG	12215
3543	UCCUAGCG A CCUGCGUC	3467	GACGCAGG GGCTAGCTACAACGA CGCTAGGA	12216
3547	AGCGACCU G CGUCAACG	3468	CGTTGACG GGCTAGCTACAACGA AGGTCGCT	12217
3549	CGACCUUG G UCAACGGC	3469	GCCGTTGA GGCTAGCTACAACGA GCAGGTGC	12218
3553	CUGCGUCA A CGGCGUGU	3470	ACACGCCG GGCTAGCTACAACGA TGACGCAG	12219
3556	CGUCAACG G CGUGGCU	3471	AGCACACG GGCTAGCTACAACGA CGTTGACG	12220
3558	UCAACGGC G UGUGGUGG	3472	CCAGCACA GGCTAGCTACAACGA GCCGTTGA	12221
3560	AACGGCGU G UGUGGAC	3473	GTCCAGCA GGCTAGCTACAACGA ACGCCGTT	12222
3562	CGGCGUGU G CUGGACUG	3474	CAGTCCAG GGCTAGCTACAACGA ACACGCCG	12223
3567	UGUGGUGG A CUGUCUAC	3475	GTAGACAG GGCTAGCTACAACGA CCAGCACA	12224
3570	GCUGGACU G UCUACCAC	3476	GTGGTAGA GGCTAGCTACAACGA AGTCCAGC	12225
3574	GACUGUCU A CCACGGCG	3477	CGCCGTGG GGCTAGCTACAACGA AGACAGTC	12226
3577	UGUCUACC A CGGCGCCG	3478	CGGCGCCG GGCTAGCTACAACGA GGTAGACA	12227
3580	CUACCACG G CGCCGGCU	3479	AGCCGGCG GGCTAGCTACAACGA CGTGGTAG	12228
3582	ACCACGGC G CCGGCUCA	3480	TGAGCCGG GGCTAGCTACAACGA GCCGTGGT	12229
3586	CGGCGCCG G CUCAAAGA	3481	TCTTTGAG GGCTAGCTACAACGA CGGCGCCG	12230
3594	GCUCAAAG A CCCUAGCC	3482	GGCTAGGG GGCTAGCTACAACGA CTTTGAGC	12231
3600	AGACCCUA G CCGGCCCA	3483	TGGGCCGG GGCTAGCTACAACGA TAGGGTCT	12232

3604	CCUAGCCG G CCCAAAGG	3484	CCTTTGGG GGCTAGCTACAACGA CGGCTAGG	12233
3613	CCCAAAGG G UCCAAUCA	3485	TGATTGGA GGCTAGCTACAACGA CCTTTGGG	12234
3618	AGGGUCCA A UCACCCAA	3486	TTGGGTGA GGCTAGCTACAACGA TGGACCCT	12235
3621	GUCCAAUC A CCCAAUG	3487	CATTTGGG GGCTAGCTACAACGA GATTGGAC	12236
3627	UCACCCAA A UGUACACC	3488	GGTGTA GGCTAGCTACAACGA TTGGGTGA	12237
3629	ACCCAAAU G UACACCAA	3489	TTGGTGTG GGCTAGCTACAACGA ATTTGGGT	12238
3631	CCAAAUUGU A CACCAUUG	3490	CATTGGTG GGCTAGCTACAACGA ACATTGGG	12239
3633	AAAUGUAC A CCAAUGUA	3491	TACATTGG GGCTAGCTACAACGA GTACATTT	12240
3637	GUACACCA A UGUAGACC	3492	GGTCTACA GGCTAGCTACAACGA TGGTGATC	12241
3639	ACACCAAU G UAGACCAG	3493	CTGGTCTA GGCTAGCTACAACGA ATTGGTGT	12242
3643	CAAUGUAG A CCAGGACC	3494	GGTCCTGG GGCTAGCTACAACGA CTACATTG	12243
3649	AGACCAGG A CCUCGUCG	3495	CGACGAGG GGCTAGCTACAACGA CCTGGTCT	12244
3654	AGGACCUC G UCGGAUGG	3496	CCATCCGA GGCTAGCTACAACGA GAGGTCTT	12245
3659	CUCGUCGG A UGGCCGGC	3497	GCCGGCCA GGCTAGCTACAACGA CCGACGAG	12246
3662	GUCGGAUG G CCGGCGCC	3498	GGCGCCGG GGCTAGCTACAACGA CATCCGAC	12247
3666	GAUGGCCG G CGCCCCC	3499	GGGGGGCG GGCTAGCTACAACGA CGGCCATC	12248
3668	UGGCCGGC G CCCCCCG	3500	CCGGGGGG GGCTAGCTACAACGA GCCGGCCA	12249
3678	CCCCCGGA G CGCGGUCC	3501	GGACCGCG GGCTAGCTACAACGA TCCGGGGG	12250
3680	CCCGGAGC G CGGUCCUU	3502	AAGGACCG GGCTAGCTACAACGA GCTCCGGG	12251
3683	CGAGCGCG G UCCUUGAC	3503	GTCAAGGA GGCTAGCTACAACGA CGCGCTCC	12252
3690	GGUCCUUG A CACCAUGC	3504	GCATGGTG GGCTAGCTACAACGA CAAGGACC	12253
3692	UCCUUGAC A CCAUGCAC	3505	GTGCATGG GGCTAGCTACAACGA GTCAAGGA	12254
3695	UGGACACC A UGCACUG	3506	CAGGTGCA GGCTAGCTACAACGA GGTGTCAA	12255
3697	GACACCAU G CACCUGCG	3507	CGCAGGTG GGCTAGCTACAACGA ATGGTGTC	12256
3699	CACCAUGC A CCUGCGGC	3508	GCCGCGAG GGCTAGCTACAACGA GCATGGTG	12257
3703	AUGCACCU G CGGCGGCU	3509	AGCCGCCG GGCTAGCTACAACGA AGGTGCAT	12258
3706	CACCUGCG G CGGCUCGG	3510	CCGAGCCG GGCTAGCTACAACGA CGCAGGTG	12259
3709	CUGCGGCG G CUCGGACC	3511	GGTCCGAG GGCTAGCTACAACGA CGCCGAG	12260
3715	CGGCUCGG A CCUUUACU	3512	AGTAAAGG GGCTAGCTACAACGA CCGAGCCG	12261
3721	GGACUUU A CUUGGUCA	3513	TGACCAAG GGCTAGCTACAACGA AAAGGTCC	12262
3726	UUUACUUG A UCACGAGA	3514	TCTCGTGA GGCTAGCTACAACGA TAAGTAA	12263
3729	ACUUGGUC A CGAGACAC	3515	GTGTCTCG GGCTAGCTACAACGA GACCAAGT	12264
3734	GUCACGAG A CACGUGA	3516	TCAGCGTG GGCTAGCTACAACGA CTCGTGAC	12265
3736	CACGAGAC A CGCUGAUG	3517	CATCAGCG GGCTAGCTACAACGA GTCTCGTG	12266
3738	CGAGACAC G CUGAUGUC	3518	GACATCAG GGCTAGCTACAACGA GTGTCTCG	12267
3742	ACACGUG A UGUCAUUC	3519	GAATGACA GGCTAGCTACAACGA CAGCGTGT	12268
3744	ACGUGAU G UCAUUCG	3520	CGGAATGA GGCTAGCTACAACGA ATCAGCGT	12269
3747	CUGAUGUC A UUCGCGUG	3521	CACCGGAA GGCTAGCTACAACGA GACATCAG	12270
3753	UCAUUCG G UGCGCGG	3522	CCGGGCCA GGCTAGCTACAACGA CGGAATGA	12271
3755	AUUCGCGU G CGCCGGCG	3523	CGCCGGCG GGCTAGCTACAACGA ACCGGAAT	12272
3757	UCCGUGUC G CCGGCGGG	3524	CCCGCCGG GGCTAGCTACAACGA GCACCGGA	12273
3761	GUGCGCGG G CGGGGUGA	3525	TCACCCCG GGCTAGCTACAACGA CGGCGCAC	12274
3766	CCGGCGGG G UGACAGCA	3526	TGCTGTCA GGCTAGCTACAACGA CCCGCCGG	12275
3769	GCGGGGUG A CAGCAGGG	3527	CCCTGCTG GGCTAGCTACAACGA CACCCCGC	12276
3772	GGGUGACA G CAGGGGGA	3528	TCCCCCTG GGCTAGCTACAACGA TGTCACCC	12277
3781	CAGGGGGA G CUUACUUA	3529	ATAGTAAG GGCTAGCTACAACGA TCCCCCTG	12278
3785	GGGAGCUU A CUUACCCC	3530	GGGGATAG GGCTAGCTACAACGA AAGTCTCC	12279
3788	AGCUUACU A UCCCCAG	3531	CTGGGGGA GGCTAGCTACAACGA AGTAAGCT	12280
3797	UCCCCAG G CCAUCUC	3532	GAGATGGG GGCTAGCTACAACGA CTGGGGGA	12281
3801	CCAGGCCC A UCUCUAC	3533	GTAGGAGA GGCTAGCTACAACGA GGGCCTGG	12282
3808	CAUCUCCU A CUUGAAGG	3534	CCTTCAAG GGCTAGCTACAACGA AGGAGATG	12283
3817	CUUGAAGG G CUCCUCGG	3535	CCGAGGAG GGCTAGCTACAACGA CCTTCAAG	12284
3826	CUCCUCGG G CGGUCCAC	3536	GTGGACCG GGCTAGCTACAACGA CCGAGGAG	12285
3829	CUCGGGCG G UCCACUGC	3537	GCAGTGGA GGCTAGCTACAACGA CGCCCGAG	12286
3833	GGCGGUCC A CUGCUCUG	3538	CAGAGCAG GGCTAGCTACAACGA GGACCGCC	12287
3836	GGUCCACU G CUCUGCCC	3539	GGGCAGAG GGCTAGCTACAACGA AGTGGACC	12288

3841	ACUGCUCU G CCCUUCGG	3540	CCGAAGGG GGCTAGCTACAACGA AGAGCAGT	12289
3851	CCUUCGGG G CACGUUGU	3541	ACAACGTG GGCTAGCTACAACGA CCCGAAGG	12290
3853	UUCGGGGC A CGUUGUGG	3542	CCACAACG GGCTAGCTACAACGA GCCCGGAA	12291
3855	CGGGGCAC G UUGUGGGC	3543	GCCCACAA GGCTAGCTACAACGA GTGCCCGG	12292
3858	GGCACGUU G UGGGCAUC	3544	GATGCCCA GGCTAGCTACAACGA AACGTGCC	12293
3862	CGUUGUGG G CAUCUUC	3545	GGAAGATG GGCTAGCTACAACGA CCACAACG	12294
3864	UUGUGGGC A UCUUCCGG	3546	CCGGAAGA GGCTAGCTACAACGA GCCCACAA	12295
3873	UCUUCGGG G CUGCUGUG	3547	CACAGCAG GGCTAGCTACAACGA CCGGAAGA	12296
3876	UCCGGGCU G CUGUGUGC	3548	GCACACAG GGCTAGCTACAACGA AGCCCGGA	12297
3879	GGGUGUG G UGUGCACC	3549	GGTGCACA GGCTAGCTACAACGA AGCAGCCC	12298
3881	GCUGGUGU G UGCACCCG	3550	CGGTGTGA GGCTAGCTACAACGA ACAGCAGC	12299
3883	UGCUGUGU G CACCCGGG	3551	CCCCGGTG GGCTAGCTACAACGA ACACAGCA	12300
3885	CUGUGUGC A CCCGGGGG	3552	CCCCCGGG GGCTAGCTACAACGA GCACACAG	12301
3894	CCCGGGGG G UUGCGAAG	3553	CTTCGCAA GGCTAGCTACAACGA CCCCCGGG	12302
3897	GGGGGGUU G CGAAGGCG	3554	CGCCTTCG GGCTAGCTACAACGA AACCCCCC	12303
3903	UUGCGAAG G CGGUGGAC	3555	GTCCACCG GGCTAGCTACAACGA CTTCGCAA	12304
3906	CGAAGGCG G UGGACUUU	3556	AAAGTCCA GGCTAGCTACAACGA CGCCTTCG	12305
3910	GGCGGUGG A CUUUGUAC	3557	GTACAAAG GGCTAGCTACAACGA CCACCGCC	12306
3915	UGGACUUU G UACCCGUU	3558	AACGGGTA GGCTAGCTACAACGA AAAGTCCA	12307
3917	GACUUUGU A CCCGUUGA	3559	TCAACGGG GGCTAGCTACAACGA ACAAGTCT	12308
3921	UUGUACCC G UUGAGUCU	3560	AGACTCAA GGCTAGCTACAACGA GGTACAAA	12309
3926	CCCGUUGA G UCUAUGGA	3561	TCCATAGA GGCTAGCTACAACGA TCAACGGG	12310
3930	UUGAGUCU A UGGAAACU	3562	AGTTTCCA GGCTAGCTACAACGA AGACTCAA	12311
3936	CUAUGGAA A CUACCAUG	3563	CATGTTAG GGCTAGCTACAACGA TTCCATAG	12312
3939	UGGAAACU A CCAUGCAG	3564	CCGCATGG GGCTAGCTACAACGA AGTTTCCA	12313
3942	AAACUACC A UGCGGUCC	3565	GGACCGCA GGCTAGCTACAACGA GGTAGTTT	12314
3944	ACUACCAU G CGGUCCCC	3566	GGGGACCG GGCTAGCTACAACGA ATGGTAGT	12315
3947	ACCAUGCG G UCCCCGGU	3567	ACCGGGGA GGCTAGCTACAACGA CGCATGGT	12316
3954	GGUCCCCG G UCUUCACG	3568	CGTGAAGA GGCTAGCTACAACGA CGGGGACC	12317
3960	CGGUCUUC A CGGACAAC	3569	GTTGTCCG GGCTAGCTACAACGA GAAGACCG	12318
3964	CUUCACGG A CAACUCGU	3570	ACGAGTTG GGCTAGCTACAACGA CCGTGAAG	12319
3967	CACGGACA A CUCGUCCC	3571	GGGACGAG GGCTAGCTACAACGA TGTCCGTG	12320
3971	GACAACUC G UCCCCCCC	3572	GGGGGGGA GGCTAGCTACAACGA GAGTTGTC	12321
3981	CCCCCCCC G CCGUACCG	3573	CGGTACGG GGCTAGCTACAACGA TGGGGGGG	12322
3984	CCCCACCU G UACCGCAG	3574	CTGCGGTA GGCTAGCTACAACGA GGCTGGGG	12323
3986	CCAGCCGU A CCGCAGAC	3575	GTCTGCGG GGCTAGCTACAACGA ACGGCTGG	12324
3989	GCCGUACC G CAGACAUU	3576	AATGTCTG GGCTAGCTACAACGA GGTACGGC	12325
3993	UACCGCAG A CAUUCCAA	3577	TTGGAATG GGCTAGCTACAACGA CTGCGGTA	12326
3995	CCGCAGAC A UUCAAGU	3578	ACTTGGA GGCTAGCTACAACGA GTCTGCGG	12327
4002	CAUUCCAA G UGGCCCAC	3579	GTGGGCCA GGCTAGCTACAACGA TTGGAATG	12328
4005	UCCAAGUG G CCCACCUA	3580	TAGGTGGG GGCTAGCTACAACGA CACTTGGA	12329
4009	AGUGGCCC A CCUACACG	3581	CGTGTAGG GGCTAGCTACAACGA GGGCCACT	12330
4013	GCCCACCU A CACGUCC	3582	GGAGCGTG GGCTAGCTACAACGA AGGTGGGC	12331
4015	CCACCUAC A CGCUCCCA	3583	TGGGAGCG GGCTAGCTACAACGA GTAGGTGG	12332
4017	ACCUACAC G CUCCACU	3584	AGTGGGAG GGCTAGCTACAACGA GTGTAGGT	12333
4023	ACGUCCC A CUGGCAGC	3585	GCTGCCAG GGCTAGCTACAACGA GGGAGCGT	12334
4027	UCCCACUG G CAGCGGCA	3586	TGCCGCTG GGCTAGCTACAACGA CAGTGGGA	12335
4030	CACUGGCA G CGGCAAGA	3587	TCTTGCCG GGCTAGCTACAACGA TGCCAGTG	12336
4033	UGGCAGCG G CAAGAGCA	3588	TGCTCTTG GGCTAGCTACAACGA CGCTGCCA	12337
4039	CGGCAAGA G CACUAAGG	3589	CCTTAGTG GGCTAGCTACAACGA TCTTGCCG	12338
4041	GCAAGAGC A UAAAGGUA	3590	TACCTTAG GGCTAGCTACAACGA GCTCTTGC	12339
4047	GCACUAAG G UACCGGCU	3591	AGCCGGTA GGCTAGCTACAACGA CTTAGTGC	12340
4049	ACUAAGGU A CCGGCUGC	3592	GCAGCCGG GGCTAGCTACAACGA ACCTTAGT	12341
4053	AGGUACCG G CUGCAUUA	3593	ATATGCAG GGCTAGCTACAACGA CGGTACCT	12342
4056	UACCGGCU G CAUAUGCA	3594	TGCATATG GGCTAGCTACAACGA AGCCGGTA	12343
4058	CCGGCUGC A UAUGCAGC	3595	GCTGCATA GGCTAGCTACAACGA GCAGCCGG	12344

4060	GGCUGCAU A UGCAGCCC	3596	GGGCTGCA GGCTAGCTACAACGA ATGCAGCC	12345
4062	CUGCAUUAU G CAGCCCAA	3597	TTGGGCTG GGCTAGCTACAACGA ATATGCAG	12346
4065	CAUAUGCA G CCCAAGGG	3598	CCCTTGGG GGCTAGCTACAACGA TGCATATG	12347
4073	GCCCAAGG G UACAAAGU	3599	ACTTTGTA GGCTAGCTACAACGA CCTTGGGC	12348
4075	CCAAAGGU A CAAAGUGC	3600	GCACTTTG GGCTAGCTACAACGA ACCCTTGG	12349
4080	GGUACAAA G UGCUCGUC	3601	GACGAGCA GGCTAGCTACAACGA TTTGTACC	12350
4082	UACAAAGU G CUCGUCCU	3602	AGGACGAG GGCTAGCTACAACGA ACTTTGTA	12351
4086	AAGUGCUC G UCCUAAAU	3603	ATTTAGGA GGCTAGCTACAACGA GAGCACTT	12352
4093	CGUCCUAA A UCCGUCCG	3604	CGGACGGA GGCTAGCTACAACGA TTAGGACG	12353
4097	CUAAAUCC G UCCGUUAC	3605	GTAACGGA GGCTAGCTACAACGA GGATTTAG	12354
4101	AUCCGUCC G UUACCGCC	3606	GGCGGTAA GGCTAGCTACAACGA GGACGGAT	12355
4104	CGUCCGUU A CCGCCACC	3607	GTTGGCGG GGCTAGCTACAACGA AACGGACG	12356
4107	CCGUUACC G CCACCUUA	3608	TAAGGTGG GGCTAGCTACAACGA GGTAACGG	12357
4110	UUACCGCC A CCUUAGGG	3609	CCCTAAGG GGCTAGCTACAACGA GCGGTAA	12358
4118	ACCUUAGG G UUUGGGGC	3610	GCCCCAAA GGCTAGCTACAACGA CCTAAGGT	12359
4125	GGUUUGGG G CGUAUAUG	3611	CATATACG GGCTAGCTACAACGA CCCAAACC	12360
4127	UUUGGGGC G UAUAUGUC	3612	GACATATA GGCTAGCTACAACGA GCCCCAAA	12361
4129	UGGGGCGU A UAUGUCUA	3613	TAGACATA GGCTAGCTACAACGA ACGCCCCA	12362
4131	GGGCGUAU A UGUCUAAG	3614	CTTAGACA GGCTAGCTACAACGA ATACGCCC	12363
4133	GCGUAUAU G UCUAAGGC	3615	GCCTTAGA GGCTAGCTACAACGA ATATACGC	12364
4140	UGUCUAAG G CACACGGU	3616	ACCGTGTG GGCTAGCTACAACGA CTTAGACA	12365
4142	UCUAAGGC A CACGGUGU	3617	ACACCGTG GGCTAGCTACAACGA GCCTTAGA	12366
4144	UAAGGCAC A CGGUGUCG	3618	CGACACCG GGCTAGCTACAACGA GTGCCTTA	12367
4147	GGCACACG G UGUCGAUC	3619	GATCGACA GGCTAGCTACAACGA CGTGTGCC	12368
4149	CACACGGU G UCGAUCCU	3620	AGGATCGA GGCTAGCTACAACGA ACCGTGTG	12369
4153	CGGUGUCG A UCCUAACA	3621	TGTTAGGA GGCTAGCTACAACGA CGACACCG	12370
4159	CGAUCCUA A CAUCAGAA	3622	TTCTGATG GGCTAGCTACAACGA TAGGATCG	12371
4161	AUCCUAAC A UCAGAAU	3623	AGTTCTGA GGCTAGCTACAACGA GTTAGGAT	12372
4167	ACAUCAGA A CUGGGGUA	3624	TACCCAGG GGCTAGCTACAACGA TCTGATGT	12373
4173	GAUCUGGG G UAAGGACC	3625	GGTCCTTA GGCTAGCTACAACGA CCCGATTC	12374
4179	GGGUAAGG A CCAUCACC	3626	GGTGATGG GGCTAGCTACAACGA CCTTACCC	12375
4182	UAAGGACC A UCACCACG	3627	CGTGGTGA GGCTAGCTACAACGA GGTCTTA	12376
4185	GGACCAUC A CCACGGGC	3628	GCCCCGTG GGCTAGCTACAACGA GATGGTCC	12377
4188	CCAUCACC A CGGGCGCC	3629	GGCGCCCG GGCTAGCTACAACGA GGTGATGG	12378
4192	CACCACGG G CGCCCCCA	3630	TGGGGGCG GGCTAGCTACAACGA CCGTGGTG	12379
4194	CCACGGGC G CCCCCAUC	3631	GATGGGGG GGCTAGCTACAACGA GCCCGTGG	12380
4200	GCGCCCCC A UCACGUAC	3632	GTACGTGA GGCTAGCTACAACGA GGGGGCGC	12381
4203	CCCCAUC A CGUACUCC	3633	GGAGTAGG GGCTAGCTACAACGA GTGGGGG	12382
4205	CCAUCAC G UACUCCAC	3634	GTGGAGTA GGCTAGCTACAACGA GTGATGGG	12383
4207	CAUCACGU A CUCCACCU	3635	AGGTGGAG GGCTAGCTACAACGA ACGTGATG	12384
4212	CGUACUCC A CCUAUGGC	3636	GCCATAGG GGCTAGCTACAACGA GGAGTACG	12385
4216	CUCCACCU A UGGCAAGU	3637	ACTTGCCA GGCTAGCTACAACGA AGGTGGAG	12386
4219	CACCUAUG G CAAGUUC	3638	GGAACCTG GGCTAGCTACAACGA CATAGGTG	12387
4223	UAUGGCAA G UUCUUGC	3639	GCAAGGAA GGCTAGCTACAACGA TTGCCATA	12388
4230	AGUUCUUU G CCGACGGU	3640	ACCGTCGG GGCTAGCTACAACGA AAGGAACT	12389
4234	CCUUGCCG A CGGUGGUU	3641	AACCACCG GGCTAGCTACAACGA CGGCAAGG	12390
4237	UGCCGACG G UGUUGCU	3642	AGCAACCA GGCTAGCTACAACGA CGTCGGCA	12391
4240	CGACGGUG G UUGCUCUG	3643	CAGAGCAA GGCTAGCTACAACGA CACCGTCG	12392
4243	CGGUGGUU G CUCUGGGG	3644	CCCCAGAG GGCTAGCTACAACGA AACCACCG	12393
4252	CUCUGGGG G CGCCUAUG	3645	CATAGGCG GGCTAGCTACAACGA CCCCAGAG	12394
4254	CUGGGGGC G CCUAUGAC	3646	GTCATAGG GGCTAGCTACAACGA GCCCCCAG	12395
4258	GGGCGCCU A UGACAUCA	3647	TGATGTCA GGCTAGCTACAACGA AGGCGCCC	12396
4261	CGCCUAUG A CAUCAUA	3648	TTATGATG GGCTAGCTACAACGA CATAGGCG	12397
4263	CCUAUGAC A UCAUAUG	3649	CATTATTA GGCTAGCTACAACGA GTCATAGG	12398
4266	AUGACAUC A UAAUGUGU	3650	CACATATTA GGCTAGCTACAACGA GATGTAT	12399
4269	ACAUCAUA A UGUGUGAU	3651	ATCACACA GGCTAGCTACAACGA TATGATGT	12400



4271	AUCAUAAU G UGUGAUGA	3652	TCATCACA GGCTAGCTACAACGA ATTATGAT	12401
4273	CAUAAUGU G UGAUGAGU	3653	ACTCATCA GGCTAGCTACAACGA ACATTATG	12402
4276	AAUGUGUG A UGAGUGCC	3654	GGCACTCA GGCTAGCTACAACGA CACACATT	12403
4280	UGUGAUGA G UGCCACUC	3655	GAGTGGCA GGCTAGCTACAACGA TCATCACA	12404
4282	UGAUGAGU G CCACUCAA	3656	TTGAGTGG GGCTAGCTACAACGA ACTCATCA	12405
4285	UGAGUGCC A CUCAAUUG	3657	CAATTGAG GGCTAGCTACAACGA GGCACCTA	12406
4290	GCCACUCA A UUGACUCG	3658	CGAGTCAA GGCTAGCTACAACGA TGAGTGGC	12407
4294	CUCAAUUG A CUCGACUU	3659	AAGTCGAG GGCTAGCTACAACGA CAATTGAG	12408
4299	UGGACUCG A CUUCCAUU	3660	AATGGAAG GGCTAGCTACAACGA CGAGTCAA	12409
4305	CGACUUCU A UUUUGGGC	3661	GCCCCAAA GGCTAGCTACAACGA GGAAGTCG	12410
4312	CAUUUUGG G CAUCGGCA	3662	TGCCGATG GGCTAGCTACAACGA CCAAAATG	12411
4314	UUUUGGGC A UCGGCACA	3663	TGTGCCGA GGCTAGCTACAACGA GCCCCAAA	12412
4318	GGGCAUCG G CACAGUCC	3664	GGACTGTG GGCTAGCTACAACGA CGATGCCC	12413
4320	GCAUCGGC A CAGUCCUG	3665	CAGGACTG GGCTAGCTACAACGA GCCGATGC	12414
4323	UCGGCACA G UCCUGGAC	3666	GTCCAGGA GGCTAGCTACAACGA TGTGCCGA	12415
4330	AGUCCUGG A CCAAGCGG	3667	CCGCTTGG GGCTAGCTACAACGA CCAGGACT	12416
4335	UGGACCAA G CGGAGACG	3668	CGTCTCCG GGCTAGCTACAACGA TTGGTCCA	12417
4341	AAGCGGAG A CGGCUGGA	3669	TCCAGCCG GGCTAGCTACAACGA CTCCGCTT	12418
4344	CGGAGACG G CUGGAGCG	3670	CGCTCCAG GGCTAGCTACAACGA CGTCTCCG	12419
4350	CGGCUGGA G CGCGGCUC	3671	GAGCCGCG GGCTAGCTACAACGA TCCAGCCG	12420
4352	GCUGGAGC G CGGCUCGU	3672	ACGAGCCG GGCTAGCTACAACGA GCTCCAGC	12421
4355	GGAGCGCG G CUCGUCGU	3673	ACGACGAG GGCTAGCTACAACGA CGCGCTCC	12422
4359	CGCGGCUC G UCGUGCUC	3674	GAGCACGA GGCTAGCTACAACGA GAGCCGCG	12423
4362	GGCUCGUC G UGCUCGCC	3675	GGCGAGCA GGCTAGCTACAACGA GACGAGCC	12424
4364	CUCGUCGU G CUCGCCAC	3676	GTGGCGAG GGCTAGCTACAACGA ACGACGAG	12425
4368	UCGUGCUC G CCACGCGU	3677	AGCGGTGG GGCTAGCTACAACGA GAGCACGA	12426
4371	UGCUCGCC A CCGCUACG	3678	CGTAGCGG GGCTAGCTACAACGA GGCAGGCA	12427
4374	UCGCCACC G CUACGCCU	3679	AGGCGTAG GGCTAGCTACAACGA GTTGGCGA	12428
4377	CCACCGCU A CGCCUCCG	3680	CGGAGGCG GGCTAGCTACAACGA AGCGGTGG	12429
4379	ACCGCUAC G CCUCGGG	3681	CCCGGAGG GGCTAGCTACAACGA GTAGCGGT	12430
4388	CCUCCGGG A UCGGUCAC	3682	GTGACCGA GGCTAGCTACAACGA CCCGGAGG	12431
4392	CGGGAUUC G UCACCGUG	3683	CACGGTGA GGCTAGCTACAACGA CGATCCCG	12432
4395	GAUCGGUC A CCGUGCCA	3684	TGGCACGG GGCTAGCTACAACGA GACCGATC	12433
4398	CGGUCACC G UGCCACAU	3685	ATGTGGCA GGCTAGCTACAACGA GGTGACCG	12434
4400	GUCACCGU G CCACAUCU	3686	GGATGTGG GGCTAGCTACAACGA ACGGTGAC	12435
4403	ACCGUGCC A CAUCCCAA	3687	TTGGGATG GGCTAGCTACAACGA GTCAGGGT	12436
4405	CGUGCCAC A UCCCAACA	3688	TGTTGGGA GGCTAGCTACAACGA GTGGCAGC	12437
4411	ACAUCCCA A CAUCGAGG	3689	CCTCGATG GGCTAGCTACAACGA TGGGATGT	12438
4413	AUCCCAAC A UCGAGGAG	3690	CTCCTCGA GGCTAGCTACAACGA GTTGGGAT	12439
4422	UCGAGGAG A UAGCCUUG	3691	CAAGGCTA GGCTAGCTACAACGA CTCCTCGA	12440
4425	AGGAGAUU G CCUUGUCC	3692	GGACAAGG GGCTAGCTACAACGA TATCTCCT	12441
4430	AUAGCCUU G UCCAACAC	3693	GTGTTGGA GGCTAGCTACAACGA AAGGCTAT	12442
4435	CUUGUCCA A CACCGGAG	3694	CTCCGTGG GGCTAGCTACAACGA TGGACAAG	12443
4437	UGUCCAAC A CCGGAGAG	3695	CTCTCCGG GGCTAGCTACAACGA GTTGGACA	12444
4446	CCGGAGAG A UCCCUUUC	3696	GAAGGGGA GGCTAGCTACAACGA CTCTCCGG	12445
4456	CCCCUUCU A UGGCAAAG	3697	CTTTGCCA GGCTAGCTACAACGA AGAAGGGG	12446
4459	CUUCUAUG G CAAAGCCA	3698	TGGCTTTG GGCTAGCTACAACGA CATAGAAG	12447
4464	AUGGCAAA G CCAUCCCC	3699	GGGGATGG GGCTAGCTACAACGA TTTGCCAT	12448
4467	GCAAAGCC A UCCCAUCC	3700	GATGGGGA GGCTAGCTACAACGA GGCTTTGC	12449
4473	CCAUCCCC A UCGAGACC	3701	GGTCTCGA GGCTAGCTACAACGA GGGGATGG	12450
4479	CCAUCGAG A CCAUCAAA	3702	TTTGATGG GGCTAGCTACAACGA CTCGATGG	12451
4482	UCGAGACC A UCAAAGGG	3703	CCCTTTGA GGCTAGCTACAACGA GGTCTCGA	12452
4496	GGGGGGAG G CAUCUCAU	3704	ATGAGATG GGCTAGCTACAACGA CTCCCCC	12453
4498	GGGGAGGC A UCUCUUCU	3705	AGATGAGA GGCTAGCTACAACGA GCCTCCCC	12454
4503	GGCAUCUC A UCUCUGC	3706	GCAGAAGA GGCTAGCTACAACGA GAGATGCC	12455
4510	CAUCUCUC G CCAUCCA	3707	TGGAATGG GGCTAGCTACAACGA AGAAGATG	12456



4513	CUUCUGCC A UUCCAAGA	3708	TCTTGGA	GGCTAGCTACAACGA	GGCAGAAG	12457
4526	AAGAAGAA A UGUGACGA	3709	TCGTCACA	GGCTAGCTACAACGA	TTCTTCTT	12458
4528	GAAGAAAU G UGACGAGC	3710	GCTCGTCA	GGCTAGCTACAACGA	ATTTCTTC	12459
4531	GAAAUUGUG A CGAGCUCG	3711	CGAGCTCG	GGCTAGCTACAACGA	CACATTTC	12460
4535	UGUGACGA G CUCGCGUC	3712	GCAGCGAG	GGCTAGCTACAACGA	TCGTCACA	12461
4539	ACGAGCUC G CUGCAAAG	3713	CTTTGCAG	GGCTAGCTACAACGA	GAGTCGT	12462
4542	AGCUCGCU G CAAAGCUG	3714	CAGCTTTG	GGCTAGCTACAACGA	AGCGAGCT	12463
4547	GCUGCAAA G CUGUCGGG	3715	CCCGACAG	GGCTAGCTACAACGA	TTTGCAGC	12464
4550	GCAAAGCU G UCGGGCCU	3716	AGGCCCGG	GGCTAGCTACAACGA	AGCTTTGC	12465
4555	GCUGUCGG G CCUCGGAC	3717	GTCCGAGG	GGCTAGCTACAACGA	CCGACAGC	12466
4562	GGCCUCGG A CUUACGC	3718	GCGTTAAG	GGCTAGCTACAACGA	CCGAGGCC	12467
4567	CGGACUUA A CGCUGUAG	3719	CTACAGCG	GGCTAGCTACAACGA	TAAGTCCG	12468
4569	GACUUAAC G CUGUAGCG	3720	CGCTACAG	GGCTAGCTACAACGA	GTTAAGTC	12469
4572	UUAACGCU G UAGCGUAG	3721	ATACGCTA	GGCTAGCTACAACGA	AGCGTTAA	12470
4575	ACGCUGUA G CGUAUAC	3722	GTAATACG	GGCTAGCTACAACGA	TACAGCGT	12471
4577	GCUGUAGC G UAUUACCG	3723	CGGTAATA	GGCTAGCTACAACGA	GCTACAGC	12472
4579	UGUAGCGU A UUACCGGG	3724	CCCGGTAA	GGCTAGCTACAACGA	ACGCTACA	12473
4582	AGCGUAU A CCGGGGUC	3725	GACCCCGG	GGCTAGCTACAACGA	AATACGCT	12474
4588	UUACCGGG G UCUCGACG	3726	CGTCGAGA	GGCTAGCTACAACGA	CCCGGTAA	12475
4594	GGGUCUCG A CGUGCCG	3727	CGGACACG	GGCTAGCTACAACGA	CGAGACCC	12476
4596	GUCUCGAC G UGUCCGUC	3728	GACGGACA	GGCTAGCTACAACGA	GTCGAGAC	12477
4598	CUCGACGU G UCCGUCAU	3729	ATGACGGA	GGCTAGCTACAACGA	ACGTCGAG	12478
4602	ACGUGUCC G UCAUACCG	3730	CGGTATGA	GGCTAGCTACAACGA	GGACACGT	12479
4605	UGUCCGUC A UACCGGCC	3731	GGCCGGTA	GGCTAGCTACAACGA	GACGGACA	12480
4607	UCCGUCAU A CCGGCCAG	3732	CTGGCCGG	GGCTAGCTACAACGA	ATGACGGA	12481
4611	UCAUACCG G CCAGCGGG	3733	CCCGCTGG	GGCTAGCTACAACGA	CGGTATGA	12482
4615	ACCGGCCA G CGGGGACG	3734	CGTCCCCG	GGCTAGCTACAACGA	TGGCCGGT	12483
4621	CAGCGGGG A CGUCGUUG	3735	CAACGACG	GGCTAGCTACAACGA	CCCCGCTG	12484
4623	GCGGGGAC G UCGUUGUC	3736	GACAACGA	GGCTAGCTACAACGA	GTCCCCGC	12485
4626	GGGACGUC G UUGUCGUG	3737	CACGACAA	GGCTAGCTACAACGA	GACGTCCC	12486
4629	ACGUCGUU G UCGUGGCA	3738	TGCCACGA	GGCTAGCTACAACGA	AACGACGT	12487
4632	UCGUUGUC G UGGCAACA	3739	TGTTGCCA	GGCTAGCTACAACGA	GACAACGA	12488
4635	UUGUCGUG G CAACAGAC	3740	GTCTGTTG	GGCTAGCTACAACGA	CACGACAA	12489
4638	UCGUGGCA A CAGACGCU	3741	AGCGTCTG	GGCTAGCTACAACGA	TGCCACGA	12490
4642	GGCAACAG A CGCUCUAA	3742	TTAGACCG	GGCTAGCTACAACGA	CTGTTGCC	12491
4644	CAACGACG A CUCUAAUG	3743	CATTAGAG	GGCTAGCTACAACGA	GTCTGTTG	12492
4650	ACGCUCUA A UGACGGGC	3744	GCCCGTCA	GGCTAGCTACAACGA	TAGAGCGT	12493
4653	CUCUAAUG A CGGGCUAU	3745	ATAGCCCC	GGCTAGCTACAACGA	CATTAGAG	12494
4657	AAUGACGG G CUAUACCG	3746	CGGTATAG	GGCTAGCTACAACGA	CCGTCATT	12495
4660	GACGGGCU A UACCGGCG	3747	CGCCGGTA	GGCTAGCTACAACGA	AGCCCGTC	12496
4662	CGGGCUAU A CCGGCGAU	3748	ATCGCCGG	GGCTAGCTACAACGA	ATAGCCCG	12497
4666	CUAUACCG G CGAUUUUG	3749	CAAAATCG	GGCTAGCTACAACGA	CGGTATAG	12498
4669	UACCGGCG A UUUUGACU	3750	AGTCAAAA	GGCTAGCTACAACGA	CGCCGGTA	12499
4675	CGAUUUUG A CUCGGUGA	3751	TCACCGAG	GGCTAGCTACAACGA	CAAAATCG	12500
4680	UUGACUCG G UGAUCGAC	3752	GTCGATCA	GGCTAGCTACAACGA	CGAGTCAA	12501
4683	ACUCGGUG A UCGACUGU	3753	ACAGTCGA	GGCTAGCTACAACGA	CACCGAGT	12502
4687	GGUGAUCG A CUGUAAUA	3754	TATTACAG	GGCTAGCTACAACGA	CGATCACC	12503
4690	GAUCGACU G UAAUACAU	3755	ATGTATTA	GGCTAGCTACAACGA	AGTCGATC	12504
4693	CGACUGUA A UACAUGUG	3756	CACATGTA	GGCTAGCTACAACGA	TACAGTCG	12505
4695	ACUGUAAU A CAUGUGUC	3757	GACACATG	GGCTAGCTACAACGA	ATTACAGT	12506
4697	UGUAAUAC A UGUGUCAC	3758	GTGACACA	GGCTAGCTACAACGA	GTATTACA	12507
4699	UAAUACAU G UGUCACCC	3759	GGGTGACA	GGCTAGCTACAACGA	ATGTATTA	12508
4701	AUACAUGU G UCACCCAA	3760	TTGGGTGA	GGCTAGCTACAACGA	ACATGTAT	12509
4704	CAUGUGUC A CCCAAACA	3761	TGTTTGGG	GGCTAGCTACAACGA	GACACATG	12510
4710	UCACCCAA A CAGUCGAC	3762	GTCGACTG	GGCTAGCTACAACGA	TTGGGTGA	12511
4713	CCCAAACA G UCGACUUC	3763	GAAGTCGA	GGCTAGCTACAACGA	TGTTTGGG	12512

4717	AACAGUCG A CUUCAGCU	3764	AGCTGAAG GGCTAGCTACAACGA CGACTGTT	12513
4723	CGACUUCA G CUUGGACC	3765	GGTCCAAG GGCTAGCTACAACGA TGAAGTCG	12514
4729	CAGCUUGG A CCCUACCU	3766	AGGTAGGG GGCTAGCTACAACGA CCAAGCTG	12515
4734	UGGACCCU A CCUUCACC	3767	GGTGAAGG GGCTAGCTACAACGA AGGGTCCA	12516
4740	CUACCUUC A CCAUUGAG	3768	CTCAATGG GGCTAGCTACAACGA GAAGGTAG	12517
4743	CCUUCACC A UUGAGACG	3769	CGTCTCAA GGCTAGCTACAACGA GGTGAAGG	12518
4749	CCAUUGAG A CGACGACC	3770	GGTCGTCG GGCTAGCTACAACGA CTCAATGG	12519
4752	UUGAGACG A CGACCGUG	3771	CACGGTCG GGCTAGCTACAACGA CGTCTCAA	12520
4755	AGACGACG A CCGUGCCC	3772	GGGCACGG GGCTAGCTACAACGA CGTCGTCT	12521
4758	CGACGACC G UGCCCCAA	3773	TTGGGGCA GGCTAGCTACAACGA GGTCGTCG	12522
4760	ACGACCGU A CCCCAAGA	3774	TCTTGGGG GGCTAGCTACAACGA ACGGTCGT	12523
4768	GCCCCAAG A CGCAGUGU	3775	ACACTGCG GGCTAGCTACAACGA CTTGGGGC	12524
4770	CCCAAGAC G CAGUGUCC	3776	GGACTCTG GGCTAGCTACAACGA GTCTTGGG	12525
4773	AAGACGCA G UGUCCCGC	3777	GCGGGACA GGCTAGCTACAACGA TCGCTCTT	12526
4775	GACGCAGU G UCCCGCUC	3778	GAGCGGGA GGCTAGCTACAACGA ACTGCGTC	12527
4780	AGUGUCCC G CUCGCAGA	3779	TCTGCGAG GGCTAGCTACAACGA GGGACACT	12528
4784	UCCCGCUC G CAGAGGCG	3780	CGCTCTG GGCTAGCTACAACGA GAGCGGGA	12529
4790	UCGCAGAG G CGAGGUAG	3781	CTACCTCG GGCTAGCTACAACGA CTCTGCGA	12530
4795	GAGGCGAG G UAGGACCG	3782	CGGTCTTA GGCTAGCTACAACGA CTCGCCCT	12531
4800	GAGGUAGG A CCGGUAGG	3783	CCTACCGG GGCTAGCTACAACGA CCTACCTC	12532
4804	UAGGACCG G UAGGGGCA	3784	TGCCCCTA GGCTAGCTACAACGA CGGTCTTA	12533
4810	CGGUAGGG G CAGGAGAG	3785	CTCTCCTG GGCTAGCTACAACGA CCCTACCG	12534
4819	CAGGAGAG G CAUAUACA	3786	TGTATATG GGCTAGCTACAACGA CTCTCCTG	12535
4821	GGAGAGGC A UAUACAGG	3787	CCTGTATA GGCTAGCTACAACGA GCCTCTCC	12536
4823	AGAGGCAU A UACAGGUU	3788	AACCTGTA GGCTAGCTACAACGA ATGCTCTT	12537
4825	AGGCAUUA A CAGGUUUG	3789	CAAACCTG GGCTAGCTACAACGA ATATGCCT	12538
4829	AUAUACAG G UUUGUGAC	3790	GTCACAAA GGCTAGCTACAACGA CTGTATAT	12539
4833	ACAGUUUU G UGACUCCA	3791	TGGAGTCA GGCTAGCTACAACGA AAACCTGT	12540
4836	GGUUUGUG A CUCCAGGA	3792	TCCTGGAG GGCTAGCTACAACGA CCAAAACC	12541
4847	CCAGGAGA G CGGCCUUC	3793	GAAGGCCG GGCTAGCTACAACGA TCTCTGGG	12542
4850	GGAGAGCG G CCUUCGGG	3794	CCCGAAGG GGCTAGCTACAACGA CGCTCTCC	12543
4858	GCCUUCGG G CAUGUUCG	3795	CGAACATG GGCTAGCTACAACGA CCGAAGGC	12544
4860	CUUCGGGC A UGUUCGAC	3796	GTCGAACA GGCTAGCTACAACGA GCCGAAG	12545
4862	UCGGGCAU G UUCGACUC	3797	GAGTCGAA GGCTAGCTACAACGA ATGCCCGA	12546
4867	CAUGUUCG A CUCCUCGG	3798	CCGAGGAG GGCTAGCTACAACGA CGAACATG	12547
4875	ACUCCUCG G UCCUGUGU	3799	ACACAGGA GGCTAGCTACAACGA CGAGGAGT	12548
4880	UCGGUCCU G UGUGAGUG	3800	CACTCACA GGCTAGCTACAACGA AGGACCGA	12549
4882	GGUCCUGU G UGAGUGCU	3801	AGCACTCA GGCTAGCTACAACGA ACAGGACC	12550
4886	CUGUGUGA G UGCUAUGA	3802	TCATAGCA GGCTAGCTACAACGA TCACACAG	12551
4888	GUGUGAGU G CUAUGACG	3803	CGTCATAG GGCTAGCTACAACGA ACTCACAC	12552
4891	UGAGUGCU A UGACGCGG	3804	CCGCGTCA GGCTAGCTACAACGA AGCACTCA	12553
4894	GUGCUAUG A CGCGGGAU	3805	ATCCCGCG GGCTAGCTACAACGA CATAGCAC	12554
4896	GCUAUGAC G CGGGAUGU	3806	ACATCCCG GGCTAGCTACAACGA GTCATAGC	12555
4901	GACGCGGG A UGUGCUUG	3807	CAAGCACA GGCTAGCTACAACGA CCCGCGTC	12556
4903	CGCGGGAU G UGCUUGGU	3808	ACCAAGCA GGCTAGCTACAACGA ATCCCGCG	12557
4905	CGGGAUGU G CUUGGUAC	3809	GTACCAAG GGCTAGCTACAACGA ACATCCCG	12558
4910	UGUGCUUG G UACGAGCU	3810	AGCTCGTA GGCTAGCTACAACGA CAAGCACA	12559
4912	UGCUUGGU A CGAGCUCA	3811	TGAGCTCG GGCTAGCTACAACGA ACCAAGCA	12560
4916	UGGUACGA G CUCACGCC	3812	GGCGTGAG GGCTAGCTACAACGA TCGTACCA	12561
4920	ACGAGCUC A CGCCCGCC	3813	GGCGGGCG GGCTAGCTACAACGA GAGCTCGT	12562
4922	GAGCUCAC G CCGCCCGA	3814	TCGGCGGG GGCTAGCTACAACGA GTGAGCTC	12563
4926	UCACGCCC G CCGAGACC	3815	GGTCTCGG GGCTAGCTACAACGA GGGCGTGA	12564
4932	CCGCCGAG A CCUCCGUU	3816	AACGGAGG GGCTAGCTACAACGA CTCGGCGG	12565
4938	AGACCUCC G UUAGGUUG	3817	CAACCTAA GGCTAGCTACAACGA GGAGGTCT	12566
4943	UCCGUUAG G UUGCGGGC	3818	GCCCGCAA GGCTAGCTACAACGA CTAACGGA	12567
4946	GUUAGGUU G CGGCUUA	3819	TAAGCCCG GGCTAGCTACAACGA AACCTAAC	12568

4950	GGUUGCGG G CUUACCUA	3820	TAGGTAAG GGCTAGCTACAACGA CCGCAACC	12569
4954	GCGGGCUU A CCUAAAUA	3821	TATTTAGG GGCTAGCTACAACGA AAGCCCCG	12570
4960	UUACCUAA A UACACCAG	3822	CTGGTGTA GGCTAGCTACAACGA TTAGGTAA	12571
4962	ACCUAAAU A CACCAGGG	3823	CCCTGGTG GGCTAGCTACAACGA ATTTAGGT	12572
4964	CUAAAUAU A CCAAGGUU	3824	AACCCTGG GGCTAGCTACAACGA GTATTTAG	12573
4970	ACACCAGG G UUGCCCUU	3825	AAGGGCAA GGCTAGCTACAACGA CCTGGTGT	12574
4973	CCAGGGUU G CCCUUCUG	3826	CAGAAGGG GGCTAGCTACAACGA AACCCTGG	12575
4981	GCCCUUCU G CCAGGACC	3827	GGTCCTGG GGCTAGCTACAACGA AGAAGGGC	12576
4987	CUGCCAGG A CCAUCUGG	3828	CCAGATGG GGCTAGCTACAACGA CCTGGCAG	12577
4990	CCAGGACC A UCUGGAGU	3829	ACTCCAGA GGCTAGCTACAACGA GGTCTCTG	12578
4997	CAUCUGGA G UUCUGGGA	3830	TCCCAGAA GGCTAGCTACAACGA TCCAGATG	12579
5008	CUGGGAGG G UUCUUUCA	3831	TGAAGACA GGCTAGCTACAACGA CCTCCAG	12580
5010	GGGAGGGU G UCUUCACA	3832	TGTGAAGA GGCTAGCTACAACGA ACCCTCCC	12581
5016	GUGUCUUC A CAGGCCUC	3833	GAGGCCTG GGCTAGCTACAACGA GAAGACAC	12582
5020	CUUCACAG G CCUCACCC	3834	GGGTGAGG GGCTAGCTACAACGA CTGTGAAG	12583
5025	CAGGCCUC A CCCACAU	3835	TATGTGGG GGCTAGCTACAACGA GAGGCCTG	12584
5029	CCUCACCC A CAUAGAUG	3836	CATCTATG GGCTAGCTACAACGA GGGTGAGG	12585
5031	UCACCCAC A UAGAUGCC	3837	GGCATCTA GGCTAGCTACAACGA GTGGGTGA	12586
5035	CCACAUAG A UGCCCACU	3838	AGTGGGCA GGCTAGCTACAACGA CTATGTGG	12587
5037	ACAUAAGU G CCCACUUC	3839	GAAGTGGG GGCTAGCTACAACGA ATCTATGT	12588
5041	AGAUGCCC A CUUCUUGU	3840	ACAAGAAG GGCTAGCTACAACGA GGGCATCT	12589
5048	CACUUCUU G UCCCAGAC	3841	GTCTGGGA GGCTAGCTACAACGA AAGAAGTG	12590
5055	UGUCCCAG A CCAAGCAG	3842	CTGCTTGG GGCTAGCTACAACGA CTGGGACA	12591
5060	CAGACCAA G CAGGCAGG	3843	CCTGCCTG GGCTAGCTACAACGA TTGGTCTG	12592
5064	CCAAGCAG G CAGGAGAA	3844	TTCTCCTG GGCTAGCTACAACGA CTGCTTGG	12593
5074	AGGAGAAA A CCUCCCCU	3845	AGGGGAGG GGCTAGCTACAACGA TTTCTCCT	12594
5083	CCUCCCCU A CCUGGUAG	3846	CTACCAGG GGCTAGCTACAACGA AGGGGAGG	12595
5088	CCUACCUG G UAGCAUAC	3847	GTATGCTA GGCTAGCTACAACGA CAGGTAGG	12596
5091	ACCUGGUA G CAUACCAA	3848	TTGGTATG GGCTAGCTACAACGA TACCAGGT	12597
5093	CUGGUAGC A UACCAAGC	3849	GCTTGGTA GGCTAGCTACAACGA GCTACCAG	12598
5095	GGUAGCAU A CCAAGCCA	3850	TGGCTTGG GGCTAGCTACAACGA ATGCTACC	12599
5100	CAUACCAA G CCACAGUG	3851	CACTGTGG GGCTAGCTACAACGA TTGGTATG	12600
5103	ACCAAGCC A CAGUGUGC	3852	GCACACTG GGCTAGCTACAACGA GGCTTGGT	12601
5106	AAGCCACA G UGUGCGCC	3853	GGCGCACA GGCTAGCTACAACGA TGTGGCTT	12602
5108	GCCACAGU G UGCGCCAG	3854	CTGGCGCA GGCTAGCTACAACGA ACTGTGGC	12603
5110	CACAGUGU G CGCCAGGG	3855	CCCTGGCG GGCTAGCTACAACGA ACACTGTG	12604
5112	CAGUGUGC G CCAGGGCU	3856	AGCCCTGG GGCTAGCTACAACGA GCACACTG	12605
5118	GCGCCAGG G CUCAGGCU	3857	AGCCTGAG GGCTAGCTACAACGA CCTGGCGC	12606
5124	GGGCUCAG G CUCCACCC	3858	GGGTGGAG GGCTAGCTACAACGA CTGAGCCC	12607
5129	CAGGCUCU A CCCCCAUC	3859	GATGGGGG GGCTAGCTACAACGA GGAGCCTG	12608
5135	CCACCCCC A UCGUGGGA	3860	TCCCACGA GGCTAGCTACAACGA GGGGGTGG	12609
5138	CCCCCAUC G UGGGAUCA	3861	TGATCCCA GGCTAGCTACAACGA GATGGGGG	12610
5143	AUCGUGGG A UCAAUGU	3862	ACATTTGA GGCTAGCTACAACGA CCCACGAT	12611
5148	GGGAUCAA A UGUGGAAG	3863	CTTCCACA GGCTAGCTACAACGA TTGATCCC	12612
5150	GAUCAAU G UGGAAGUG	3864	CATTCCA GGCTAGCTACAACGA ATTTGATC	12613
5156	AUGUGGAA G UGUCUCAC	3865	GTGAGACA GGCTAGCTACAACGA TTCCACAT	12614
5158	GUGGAAGU G UCUCACAC	3866	GTGTGAGA GGCTAGCTACAACGA ACTTCCAC	12615
5163	AGUGUCUC A CACGGCUA	3867	TAGCCGTG GGCTAGCTACAACGA GAGACACT	12616
5165	UGUCUCAC A CGGCUAAA	3868	TTTAGCCG GGCTAGCTACAACGA GTGAGACA	12617
5168	CUCACACG G CUAAAGCC	3869	GGCTTTAG GGCTAGCTACAACGA CGTGTGAG	12618
5174	CGGCUAAA G CCUACGCU	3870	AGCGTAGG GGCTAGCTACAACGA TTTAGCCG	12619
5178	UAAAGCCU A CGCUACAC	3871	GTGTAGCG GGCTAGCTACAACGA AGGCTTTA	12620
5180	AAGCCUAC G CUACACGG	3872	CCGTGTAG GGCTAGCTACAACGA GTAGGCTT	12621
5183	CCUACGCU A CACGGGCC	3873	GGCCCGTG GGCTAGCTACAACGA AGCCTAGG	12622
5185	UACGCUAC A CCGGCCAA	3874	TTGGCCCG GGCTAGCTACAACGA GTAGCGTA	12623
5189	CUACACGG G CCAACACC	3875	GGTGTGGG GGCTAGCTACAACGA CCGTGTAG	12624

5193	ACGGGGCCA A CACCCUG	3876	CAGGGGTG GGCTAGCTACAACGA TGGCCCGT	12625
5195	GGGCCAAC A CCCUGCU	3877	AGCAGGGG GGCTAGCTACAACGA GTTGGCCC	12626
5201	ACACCCCU G CUGUAUAG	3878	CTATACAG GGCTAGCTACAACGA AGGGGTGT	12627
5204	CCCUGCU G UAUAGGCU	3879	AGCCTATA GGCTAGCTACAACGA AGCAGGGG	12628
5206	CCUGCUGU A UAGGCUAG	3880	CTAGCCTA GGCTAGCTACAACGA ACAGCAGG	12629
5210	CUGUAUAG G CUAGGAGC	3881	GCTCCTAG GGCTAGCTACAACGA CTATACAG	12630
5217	GGCUAGGA G CCGUCCAA	3882	TTGGACGG GGCTAGCTACAACGA TCCTAGCC	12631
5220	UAGGAGCC G UCCAAAAU	3883	ATTTTGGG GGCTAGCTACAACGA GGCTCCTA	12632
5227	CGUCCAAA A UGAUGUCA	3884	TGACATCA GGCTAGCTACAACGA TTTGGACG	12633
5230	CCAAAAUG A UGUCACCC	3885	GGGTGACA GGCTAGCTACAACGA CATTTTGG	12634
5232	AAAAUGAU G UCACCCUC	3886	GAGGGTGA GGCTAGCTACAACGA ATCATTIT	12635
5235	AUGAUGUC A CCCUCACA	3887	TGTGAGGG GGCTAGCTACAACGA GACATCAT	12636
5241	UCACCCUC A CACACCCC	3888	GGGGTGTG GGCTAGCTACAACGA GAGGGTGA	12637
5243	ACCCUCAC A CACCCCAU	3889	ATGGGGTG GGCTAGCTACAACGA GTGAGGGT	12638
5245	CCUCAGC A CCCAUAA	3890	TTATGGGG GGCTAGCTACAACGA GTGTGAGG	12639
5250	CACACCCC A UAACCAA	3891	TTTGTTTA GGCTAGCTACAACGA GGGGTGTG	12640
5253	ACCCCAUA A CCAAUAC	3892	GTATTTGG GGCTAGCTACAACGA TATGGGGT	12641
5258	AUAACCAA A UACAUCAU	3893	ATGATGTA GGCTAGCTACAACGA TTGTTTAT	12642
5260	AACCAAU A CAUCAUGA	3894	TCATGATG GGCTAGCTACAACGA ATTTGGTT	12643
5262	CCAAUAC A UCAUGACA	3895	TGTCATGA GGCTAGCTACAACGA GTATTTGG	12644
5265	AAUACAUC A UGACAUGC	3896	GCATGTCA GGCTAGCTACAACGA GATGTATT	12645
5268	ACAUCAUG A CAUGCAUG	3897	CATGCATG GGCTAGCTACAACGA CATGATGT	12646
5270	AUCAUGAC A UGCAUGUC	3898	GACATGCA GGCTAGCTACAACGA GTCATGAT	12647
5272	CAUGACAU G CAUGUCGG	3899	CCGACATG GGCTAGCTACAACGA ATGTCATG	12648
5274	UGACAUGC A UGUCGGCU	3900	AGCCGACA GGCTAGCTACAACGA GCATGTCA	12649
5276	ACAUGCAU G UCGGCUGA	3901	TCAGCCGA GGCTAGCTACAACGA ATGCATGT	12650
5280	GCAUGUCG G CUGACCUG	3902	CAGGTCAG GGCTAGCTACAACGA CGACATGC	12651
5284	GUCGGCUG A CCUGGAGG	3903	CCTCCAGG GGCTAGCTACAACGA CAGCCGAC	12652
5292	ACCUGGAG G UCGUCACC	3904	GGTGACGA GGCTAGCTACAACGA CTCCAGGT	12653
5295	UGGAGGUC G UCACCAGC	3905	GCTGGTGA GGCTAGCTACAACGA GACCTCCA	12654
5298	AGGUCGUC A CCAGCACC	3906	GGTGCTGG GGCTAGCTACAACGA GACGACCT	12655
5302	CGUCACCA G CACCUGGG	3907	CCCAGGTG GGCTAGCTACAACGA TGGTGACG	12656
5304	UCACCAGC A CCUGGGUG	3908	CACCCAGG GGCTAGCTACAACGA CCTGGTGA	12657
5310	GCACCUGG G UGCUAGUA	3909	TACTAGCA GGCTAGCTACAACGA CCAGGTGC	12658
5312	ACCUGGGU G CUAGUAGG	3910	CCTACTAG GGCTAGCTACAACGA ACCCAGGT	12659
5316	GGGUGCUA G UAGGUGGC	3911	GCCACCTA GGCTAGCTACAACGA TAGCACCC	12660
5320	GUAGUAG G UGGCGUCC	3912	GGACGCCA GGCTAGCTACAACGA CTACTAGC	12661
5323	AGUAGGUG G CGUCCUGG	3913	CCAGGACG GGCTAGCTACAACGA CACCTACT	12662
5325	UAGGUGGC G UCCUGGCA	3914	TGCCAGGA GGCTAGCTACAACGA GCCACCTA	12663
5331	GCGUCCUG G CAGCUCUG	3915	CAGAGCTG GGCTAGCTACAACGA CAGGACGC	12664
5334	UCCUGGCA G CUCUGACC	3916	GGTCAGAG GGCTAGCTACAACGA TGCCAGGA	12665
5340	CAGCUCUG A CCGCGUAU	3917	ATACGCGG GGCTAGCTACAACGA CAGAGCTG	12666
5343	CUCUGACC G CGUAUUGC	3918	GCAATACG GGCTAGCTACAACGA GGTCAGAG	12667
5345	CUGACCGC G UAUUGCCU	3919	AGGCAATA GGCTAGCTACAACGA GCGGTCAG	12668
5347	GACCGCGU A UUGCCUGA	3920	TCAGGCAA GGCTAGCTACAACGA ACGCGGTC	12669
5350	CGCGUAUU G CCUGACGA	3921	TCGTGAGG GGCTAGCTACAACGA AATACGCG	12670
5355	AUUGCCUG A CGACAGGC	3922	GCCTGTCT GGCTAGCTACAACGA CAGGCAAT	12671
5358	GCCUGACG A CAGGCAGC	3923	GCTGCCTG GGCTAGCTACAACGA CGTCAGGC	12672
5362	GACGACAG G CAGCGUGG	3924	CCACGCTG GGCTAGCTACAACGA CTGTCTGC	12673
5365	GACAGGCA G CGUGGUCA	3925	TGACCACG GGCTAGCTACAACGA TGCCTGTC	12674
5367	CAGGCAGC G UGGUCAUU	3926	AATGACCA GGCTAGCTACAACGA GCTGCCTG	12675
5370	GCAGCGUG G UCAUUGUG	3927	CACAATGA GGCTAGCTACAACGA CACGCTGC	12676
5373	GCGUGGUC A UUGUGGGC	3928	GCCCACAA GGCTAGCTACAACGA GACCACGC	12677
5376	UGGUCAUU G UGGGCAGA	3929	TCTGCCCA GGCTAGCTACAACGA AATGACCA	12678
5380	CAUUGUGG G CAGAAUCA	3930	TGATTCTG GGCTAGCTACAACGA CCACAATG	12679
5385	UGGGCAGA A UCAUCUUG	3931	CAAGATGA GGCTAGCTACAACGA TCTGCCCA	12680

5388	GCAGAAUC A UCUUGUCC	3932	GGACAAGA GGCTAGCTACAACGA GATTCTGC	12681
5393	AUCAUCU G UCCGGGAA	3933	TTCCCCGA GGCTAGCTACAACGA AAGATGAT	12682
5402	UCCGGGAA G CCGGUGU	3934	ACAGCCGG GGCTAGCTACAACGA TTCCCCGA	12683
5406	GGAAGCCG G CUGUUAUC	3935	GATAACAG GGCTAGCTACAACGA CGGCTTCC	12684
5409	AGCCGGCU G UUAUCCCC	3936	GGGGATAA GGCTAGCTACAACGA AGCCGGCT	12685
5412	CGGUGU G UCCCCGAC	3937	GTCGGGGA GGCTAGCTACAACGA AACAGCCG	12686
5419	UAUCCCCG A CAGGGAGG	3938	CCTCCCTG GGCTAGCTACAACGA CGGGGATA	12687
5427	ACAGGGAG G CUCUCUAC	3939	GTAGAGAG GGCTAGCTACAACGA CTCCCTGT	12688
5434	GGCUCUCU A CCAGGAGU	3940	ACTCCTGG GGCTAGCTACAACGA AGAGAGCC	12689
5441	UACCAGGA G UUCGAUGA	3941	TCATCGAA GGCTAGCTACAACGA TCCTGGTA	12690
5446	GGAGUUCG A UGAGAUGG	3942	CCATCTCA GGCTAGCTACAACGA CGAATCC	12691
5451	UCGAUGAG A UGGAGGAG	3943	CTCCTCCA GGCTAGCTACAACGA CTCATCGA	12692
5459	AUGGAGGA G UGUGCCUC	3944	GAGGCACA GGCTAGCTACAACGA TCCTCCAT	12693
5461	GGAGGAGU G UGCCUCAC	3945	GTGAGGCA GGCTAGCTACAACGA ACTCCTCC	12694
5463	AGGAGUGU G CCUCACAC	3946	GTGTGAGG GGCTAGCTACAACGA AACTCCT	12695
5468	UGUGCCUC A CACCUCCT	3947	GGGAGGTG GGCTAGCTACAACGA GAGGCACA	12696
5470	UGCCUCAC A CCUCCCUU	3948	AAGGGAGG GGCTAGCTACAACGA GTGAGGCA	12697
5479	CCUCCCUU A CAUCGAAC	3949	GTTTCGATG GGCTAGCTACAACGA AAGGGAGG	12698
5481	UCCCUUAC A UCGAACAG	3950	CTGTTCGA GGCTAGCTACAACGA GTAAGGGA	12699
5486	UACAUCGA A CAGGGGAU	3951	ATCCCCTG GGCTAGCTACAACGA TCGATGTA	12700
5493	AACAGGGG A UGCAGCUC	3952	GAGCTGCA GGCTAGCTACAACGA CCCCTGTT	12701
5495	CAGGGGAU G CAGCUCGC	3953	GCGAGCTG GGCTAGCTACAACGA ATCCCTTG	12702
5498	GGGAUGCA G CUCGCCGA	3954	TCGGCGAG GGCTAGCTACAACGA TGCATCCC	12703
5502	UGCAGCUC G CCGAGCAG	3955	CTGCTCGG GGCTAGCTACAACGA GAGCTGCA	12704
5507	CUCGCCGA G CAGUUCAA	3956	TTGAACTG GGCTAGCTACAACGA TCGGCGAG	12705
5510	GCCGAGCA G UUCAAGCA	3957	TGCTTGAA GGCTAGCTACAACGA TGCTCGGC	12706
5516	CAGUUCAA G CAGAAGGC	3958	GCCTTCTG GGCTAGCTACAACGA TTGAACTG	12707
5523	AGCAGAAG G CGCUCGGA	3959	TCCGAGCG GGCTAGCTACAACGA CTTCTGCT	12708
5525	CAGAAGGC G CUCGGAU	3960	AATCCGAG GGCTAGCTACAACGA CGCTTCTG	12709
5531	GCGCUCGG A UUGCUGCA	3961	TGCAGCAA GGCTAGCTACAACGA CCGAGCGC	12710
5534	CUCGGAU G CUGCAAAC	3962	GTTTGCAG GGCTAGCTACAACGA AATCCGAG	12711
5537	GGAUUGCU G CAAACAGC	3963	GCTGTTTG GGCTAGCTACAACGA AGCAATCC	12712
5541	UGCUGCAA A CAGCCACC	3964	GGTGGCTG GGCTAGCTACAACGA TTGCAGCA	12713
5544	UGCAAACA G CCACCAAC	3965	GTTGGTGG GGCTAGCTACAACGA TGTTTGCA	12714
5547	AAACAGCC A CCAACCAA	3966	TTGGTTGG GGCTAGCTACAACGA GGCTGTTT	12715
5551	AGCCACCA A CCAAGCGG	3967	CCGCTTGG GGCTAGCTACAACGA TGGTGGCT	12716
5556	CCAACCAA G CGGAGGCU	3968	AGCCTCCG GGCTAGCTACAACGA TTGGTTGG	12717
5562	AAGCGGAG G CUGCUGCU	3969	AGCAGCAG GGCTAGCTACAACGA CTCGCCCT	12718
5565	CGGAGGCU G CUGCUCCC	3970	GGGAGCAG GGCTAGCTACAACGA AGCCTCCG	12719
5568	AGGCUGCU G CUCCCGUG	3971	CACGGGAG GGCTAGCTACAACGA AGCAGCCT	12720
5574	CUGCUCCC G UGGUGGAA	3972	TTCCACCA GGCTAGCTACAACGA GGGAGCAG	12721
5577	CUCCCGUG G UGGAAUCC	3973	GGATTCCA GGCTAGCTACAACGA CACGGGAG	12722
5582	GUGGUGGA A UCCAAGUG	3974	CACTTGGA GGCTAGCTACAACGA TCCACCAC	12723
5588	GAAUCCAA G UGGCGAGC	3975	GCTCGCCA GGCTAGCTACAACGA TTGGATTC	12724
5591	UCCAAGUG G CGAGCCCU	3976	AGGGCTCG GGCTAGCTACAACGA CACTTGGA	12725
5595	AGUGGCGA G CCCUUGAG	3977	CTCAAGGG GGCTAGCTACAACGA CTCGCCACT	12726
5604	CCCUUGAG G CUUUCUGG	3978	CCAGAAAG GGCTAGCTACAACGA CTCAAGGG	12727
5613	CUUUCUGG G CGAAGCAC	3979	GTGCTTCG GGCTAGCTACAACGA CCAGAAAG	12728
5618	UGGGCGAA G CACAUGUG	3980	CACATGTG GGCTAGCTACAACGA TTCGCCCA	12729
5620	GGCGAAGC A CAUGUGGA	3981	TCCACATG GGCTAGCTACAACGA GCTTCGCC	12730
5622	CGAAGCAC A UGUGGAU	3982	ATTCCACA GGCTAGCTACAACGA GTGCTTCG	12731
5624	AAGCACAU G UGGAAU	3983	AAATTCCA GGCTAGCTACAACGA ATGTGCTT	12732
5629	CAUGUGGA A UUUCAUCA	3984	TGATGAAA GGCTAGCTACAACGA TCCACATG	12733
5634	GGAAUUUC A UCAGCGGG	3985	CCCGCTGA GGCTAGCTACAACGA GAAATTCC	12734
5638	UUUCAUCA G CGGGAUAC	3986	GTATCCCG GGCTAGCTACAACGA TGATGAAA	12735
5643	UCAGCGGG A UACAGUAC	3987	GTAATGTA GGCTAGCTACAACGA CCCGCTGA	12736

5645	AGCGGGAU A CAGUACCU	3988	AGGTACTG GGCTAGCTACAACGA ATCCCGCT	12737
5648	GGGAUACA G UACCUAGC	3989	GCTAGGTA GGCTAGCTACAACGA TGTATCCC	12738
5650	GAUACAGU A CUAAGCAG	3990	CTGCTAGG GGCTAGCTACAACGA ACTGTATC	12739
5655	AGUACCUA G CAGGCUUG	3991	CAAGCCTG GGCTAGCTACAACGA TAGGTACT	12740
5659	CCUAGCAG G CUUGUCCA	3992	TGGACAAG GGCTAGCTACAACGA CTGCTAGG	12741
5663	GCAGGCUU G UCCACUCU	3993	AGAGTGGA GGCTAGCTACAACGA AAGCCTGC	12742
5667	GCUUGUCC A CUCUGCCU	3994	AGGCAGAG GGCTAGCTACAACGA GGACAAGC	12743
5672	UCCACUCU G CCUGGGAA	3995	TTCCCGAG GGCTAGCTACAACGA AGAGTGGA	12744
5680	GCCUGGGA A CCCCGCGA	3996	TCGCGGGG GGCTAGCTACAACGA TCCCAGGC	12745
5685	GGAAACCC G CGAUAGCA	3997	TGCTATCG GGCTAGCTACAACGA GGGGTTCC	12746
5688	ACCCCGCG A UAGCAUCA	3998	TGATGCTA GGCTAGCTACAACGA CGCGGGGT	12747
5691	CCGCGAUA G CAUCAUUG	3999	CAATGATG GGCTAGCTACAACGA TATCGCGG	12748
5693	GCGAUAGC A UCAUUGAU	4000	ATCAATGA GGCTAGCTACAACGA GCTATCGC	12749
5696	AUAGCAUC A UUGAUGGC	4001	GCCATCAA GGCTAGCTACAACGA GATGCTAT	12750
5700	CAUCAUUG A UGGCAUUC	4002	GAATGCCA GGCTAGCTACAACGA CAATGATG	12751
5703	CAUUGAUG G CAUUCACA	4003	TGTGAATG GGCTAGCTACAACGA CATCAATG	12752
5705	UUGAUGGC A UUCACAGC	4004	GCTGTGAA GGCTAGCTACAACGA GCCATCAA	12753
5709	UGGCAUUC A CAGCCUCC	4005	GGAGGCTG GGCTAGCTACAACGA GAATGCCA	12754
5712	CAUUCACA G CCUCCAUC	4006	GATGGAGG GGCTAGCTACAACGA TGTGAATG	12755
5718	CAGCCUCC A UCACCAGC	4007	GCTGGTGA GGCTAGCTACAACGA GGAGGCTG	12756
5721	CCUCCAUC A CCAGCCCG	4008	CGGGCTGG GGCTAGCTACAACGA GATGGAGG	12757
5725	CAUCACCA G CCCGCUCA	4009	TGAGCGGG GGCTAGCTACAACGA TGGTGATG	12758
5729	ACCAGCCC G CUCACCAC	4010	GTGGTGAG GGCTAGCTACAACGA GGGCTGGT	12759
5733	GCCCCGUC A CCACCCAA	4011	TTGGGTGG GGCTAGCTACAACGA GAGCGGGC	12760
5736	CGCUCACC A CCCAAAGC	4012	GCTTTGGG GGCTAGCTACAACGA GGTGAGCG	12761
5743	CACCCAAA G CACCCUCC	4013	GGAGGGTG GGCTAGCTACAACGA TTTGGGTG	12762
5745	CCCAAAGC A CCCUCCUG	4014	CAGGAGGG GGCTAGCTACAACGA AGGATGGT	12763
5753	ACCCUCCU G UUCAACAU	4015	ATGTTGAA GGCTAGCTACAACGA AGGAGGGT	12764
5758	CCUGUUCA A CAUCUUGG	4016	CCAAGATG GGCTAGCTACAACGA TGAACAGG	12765
5760	UGUUCAAC A UCUUGGGA	4017	TCCCAAGA GGCTAGCTACAACGA GTTGAACA	12766
5771	UUGGGAGG G UGGGUGGC	4018	GCCACCCA GGCTAGCTACAACGA CCTCCCAA	12767
5775	GAGGGUGG G UGGCCGCC	4019	GGCGGCCA GGCTAGCTACAACGA CCACCCTC	12768
5778	GGUGGGUG G CCGCCCAA	4020	TTGGGCGG GGCTAGCTACAACGA CACCCACC	12769
5781	GGUGGGCC G CCCAACUC	4021	GAGTTGGG GGCTAGCTACAACGA GGCCACCC	12770
5786	GCCGCCCA A CUCGCUC	4022	GGAGCGAG GGCTAGCTACAACGA TGGCGGGC	12771
5790	CCCAACUC G CUCCCCC	4023	GGGGGGAG GGCTAGCTACAACGA GAGTTGGG	12772
5802	CCCCCAGA G CCGUUUCG	4024	CGAAACGG GGCTAGCTACAACGA TCTGGGGG	12773
5805	CCAGAGCC G UUCGGGCC	4025	GGCCGAAA GGCTAGCTACAACGA GGCTCTGG	12774
5811	CCGUUUCG G CCUUCGUG	4026	CACGAAGG GGCTAGCTACAACGA CGAAACGG	12775
5817	CGGCCUUC G UGGGCGCC	4027	GGCGCCCA GGCTAGCTACAACGA GAAGGCCG	12776
5821	CUUCGUGG G CGCCGGCA	4028	TGCCGGCG GGCTAGCTACAACGA CCACGAAG	12777
5823	UCGUGGGC G CCGGCAUC	4029	GATGCCCG GGCTAGCTACAACGA GCCACGA	12778
5827	GGGCGCCG G CAUCGCUG	4030	CAGCGATG GGCTAGCTACAACGA CGCGGCC	12779
5829	GCGCCGGC A UCGCUGGC	4031	GCCAGCGA GGCTAGCTACAACGA GCCGGCGC	12780
5832	CCGGCAUC G CUGGCGCG	4032	CGCGCCAG GGCTAGCTACAACGA GATGCCGG	12781
5836	CAUCGCUG G CGCGGCUG	4033	CAGCCGCG GGCTAGCTACAACGA CAGCGATG	12782
5838	UCGCUGGC G CGGCUGUU	4034	AACAGCCG GGCTAGCTACAACGA GCCAGCGA	12783
5841	CUGGCGCG G CUGUUGGC	4035	GCCAACAG GGCTAGCTACAACGA CGCGCCAG	12784
5844	GCGCGGCU G UUGGCAGC	4036	GCTGCCAA GGCTAGCTACAACGA AGCCGCGC	12785
5848	GGCUGUUG G CAGCAUAG	4037	CTATGCTG GGCTAGCTACAACGA CAACAGCC	12786
5851	UGUUGGCA G CAUAGGCC	4038	GGCCTATG GGCTAGCTACAACGA TGCCAACA	12787
5853	UUGGCAGC A UAGGCCUU	4039	AAGGCCTA GGCTAGCTACAACGA GCTGCCAA	12788
5857	CAGCAUAG G CCUUGGGA	4040	TCCCAAGG GGCTAGCTACAACGA CTATGCTG	12789
5868	UUGGGAAG G UGCUUGUA	4041	TACAAGCA GGCTAGCTACAACGA CTTCCCAA	12790
5870	GGGAAGGU G CUUGUAGA	4042	TCTACAAG GGCTAGCTACAACGA ACCTTCCC	12791
5874	AGGUGCUU G UAGACAUU	4043	AATGTCTA GGCTAGCTACAACGA AAGCACCT	12792

5878	GCUUGUAG A CAUUCUGG	4044	CCAGAATG GGCTAGCTACAACGA CTACAAGC	12793
5880	UUGUAGAC A UUCUGGCG	4045	CGCCAGAA GGCTAGCTACAACGA GTCTACAA	12794
5886	ACAUUCUG G CGGGCUAU	4046	ATAGCCCG GGCTAGCTACAACGA CAGATGT	12795
5890	UCUGGCGG G CUAUGGAG	4047	CTCCATAG GGCTAGCTACAACGA CCGCCAGA	12796
5893	GGCGGGCU A UGGAGCAG	4048	CTGCTCCA GGCTAGCTACAACGA AGCCCGCC	12797
5898	GCUAUGGA G CAGGAGUG	4049	CACTCCTG GGCTAGCTACAACGA TCCATAGC	12798
5904	GAGCAGGA G UGGCGGGU	4050	ACCCGCCA GGCTAGCTACAACGA TCCTGCTC	12799
5907	CAGGAGUG G CGGGUGCU	4051	AGCACCCG GGCTAGCTACAACGA CACTCCTG	12800
5911	AGUGGCGG G UGCUCUCG	4052	CGAGAGCA GGCTAGCTACAACGA CCGCCACT	12801
5913	UGGCGGGU G CUCUCGUG	4053	CACGAGAG GGCTAGCTACAACGA ACCCGCCA	12802
5919	GUGCUCUC G UGGCCUUC	4054	GAAGGCCA GGCTAGCTACAACGA GAGAGCAC	12803
5922	CUCUCUG G CCUUCAAG	4055	CTTGAAGG GGCTAGCTACAACGA CACGAGAG	12804
5931	CCUUCAAG G UCAUGAGC	4056	GCTCATGA GGCTAGCTACAACGA CTTGAAGG	12805
5934	UCAAGGUC A UGAGCGGG	4057	CCCGCTCA GGCTAGCTACAACGA GACCTGA	12806
5938	GGUCAUGA G CGGGGAGA	4058	TCTCCCCG GGCTAGCTACAACGA TCATGACC	12807
5946	GCGGGGAG A UGCCUUCU	4059	AGAAGGCA GGCTAGCTACAACGA CTCCCCGC	12808
5948	GGGGAGAU G CCUUCUAC	4060	GTAGAAGG GGCTAGCTACAACGA ATCTCCCC	12809
5955	UGCCUUCU A CCGAGGAC	4061	GTCCTCGG GGCTAGCTACAACGA AGAAGGCA	12810
5962	UACCGAGG A CCUGGUCA	4062	TGACCAGG GGCTAGCTACAACGA CCTCGGTA	12811
5967	AGGACCUG G UCAACUUA	4063	TAAGTTGA GGCTAGCTACAACGA CAGTCTCT	12812
5971	CCUGGUCA A CUUACUCC	4064	GGAGTAAG GGCTAGCTACAACGA TGACCAGG	12813
5975	GUCAACUU A CUCCUGGC	4065	GCAGGGAG GGCTAGCTACAACGA AAGTTGAC	12814
5982	UACUCCCU G CCAUCCUC	4066	GAGGATGG GGCTAGCTACAACGA AGGGAGTA	12815
5985	UCCUGGCC A UCCUCUCU	4067	AGAGAGGA GGCTAGCTACAACGA GGCAGGGA	12816
5998	CUCUCCUG G CGCCUGG	4068	CCAGGGCG GGCTAGCTACAACGA CAGGAGAG	12817
6000	CUCUGGC G CCCUGGUC	4069	GACCAGGG GGCTAGCTACAACGA GCCAGGAG	12818
6006	GCGCCUG G UCGUCGGG	4070	CCCGACGA GGCTAGCTACAACGA CAGGGCGC	12819
6009	CCCUGGUG G UCGGGUG	4071	CACCCGCA GGCTAGCTACAACGA GACCAGGG	12820
6015	UCGUCGG G UGGUGUGC	4072	GCACACCA GGCTAGCTACAACGA CCGGACGA	12821
6018	UCGGGGUG G UGUGCGCA	4073	TGCGCACA GGCTAGCTACAACGA CACCCGCA	12822
6020	GGGGUGGU G UGCGCAGC	4074	GCTGCGCA GGCTAGCTACAACGA ACCACCCC	12823
6022	GGUGGUGU G CGCAGCGA	4075	TCGCTGCG GGCTAGCTACAACGA ACACCACC	12824
6024	UGGUGUGC G CAGCGAUA	4076	TATCGCTG GGCTAGCTACAACGA GCACACCA	12825
6027	UGUGCGCA G CGAUACUG	4077	CAGTATCG GGCTAGCTACAACGA TGCGCACA	12826
6030	GCGCAGCG A UACUGCGU	4078	ACGCAGTA GGCTAGCTACAACGA CGCTGCGC	12827
6032	GCAGCGAU A CUGCGUG	4079	CGACGCGA GGCTAGCTACAACGA ATCGCTGC	12828
6035	GCGAUACU G CGUCGGCA	4080	TGCCGACG GGCTAGCTACAACGA AGTATCGC	12829
6037	GAUACUGC G UCGGCAUG	4081	CATGCCGA GGCTAGCTACAACGA CGAGTATC	12830
6041	CUGCGUCG G CAUGUGGG	4082	CCCACATG GGCTAGCTACAACGA CGACGCAG	12831
6043	GCGUCGGC A UGUGGGCC	4083	GGCCACCA GGCTAGCTACAACGA GCCGACGC	12832
6045	GUCGGCAU G UGGGCCCA	4084	TGGGCCCA GGCTAGCTACAACGA ATGCCGAC	12833
6049	GCAUGUGG G CCCAGGAG	4085	CTCCTGGG GGCTAGCTACAACGA CCACATGC	12834
6061	AGGAGAGG G CGCUGUGC	4086	GCACAGCG GGCTAGCTACAACGA CCTCTCCT	12835
6063	GAGAGGGC G CUGUGCAG	4087	CTGCACAG GGCTAGCTACAACGA GCCCTCTC	12836
6066	AGGGCGCU G UGCAGUGG	4088	CCACTGCA GGCTAGCTACAACGA AGCCCTCT	12837
6068	GGCGCUGU G CAGUGGAU	4089	ATCCTACTG GGCTAGCTACAACGA ACAGCGCC	12838
6071	GCUGUGCA G UGGAUGAA	4090	TTTCATCCA GGCTAGCTACAACGA TGCACAGC	12839
6075	UGCAGUGG A UGAAUCGG	4091	CCGATTCA GGCTAGCTACAACGA CCACTGCA	12840
6079	GUGGAUGA A UCGGUGA	4092	TCAGCCGA GGCTAGCTACAACGA TCATCCAC	12841
6083	AUGAAUCG G CUGAUAGC	4093	GCTATCAG GGCTAGCTACAACGA CGATTCAT	12842
6087	AUCGGCUG A UAGCGUUC	4094	GAACGCTA GGCTAGCTACAACGA CAGCCGAT	12843
6090	GGCUGAUA G CGUUCGCU	4095	AGCGAAGC GGCTAGCTACAACGA TATCAGCC	12844
6092	CUGAUAGC G UUCGCUUC	4096	GAAGCGAA GGCTAGCTACAACGA GCTATCAG	12845
6096	UAGCGUUC G CUUCGCGG	4097	CCGCGAAG GGCTAGCTACAACGA GAACGCTA	12846
6101	UUCGCUUC G CGGGGCAA	4098	TTGCCCCG GGCTAGCTACAACGA GAAGCGAA	12847
6106	UUCGCGGG G CAACCAUG	4099	CATGGTTG GGCTAGCTACAACGA CCCGCGAA	12848



6109	GCGGGGCA A CCAUGUCU	4100	AGACATGG GGCTAGCTACAACGA TGCCCCGC	12849
6112	GGGCAACC A UGUCUCCC	4101	GGGAGACA GGCTAGCTACAACGA GGTGCCCC	12850
6114	GCAACCAU G UCUCUCCC	4102	GGGGGAGA GGCTAGCTACAACGA ATGGTTGC	12851
6123	UCUCUCCC A CGCACUAU	4103	ATAGTGC G GCTAGCTACAACGA GGGGGAGA	12852
6125	UCCCCCAC G CACUAUGU	4104	ACATAGTG GGCTAGCTACAACGA GTGGGGGA	12853
6127	CCCCACGC A CUAUGUGC	4105	GCACATAG GGCTAGCTACAACGA GCGTGGGG	12854
6130	CACGCACU A UGUGCCUG	4106	CAGGCACA GGCTAGCTACAACGA AGTGCGTG	12855
6132	CGCACUAU G UGCCUGAG	4107	CTCAGGCA GGCTAGCTACAACGA ATAGTGC G	12856
6134	CACUAUGU G CCUGAGAG	4108	CTCTCAGG GGCTAGCTACAACGA ACATAGTG	12857
6142	GCCUGAGA G CGACGCAG	4109	CTGCGTCG GGCTAGCTACAACGA TCTCAGGC	12858
6145	UGAGAGCG A CGCAGCGG	4110	CCGCTGCG GGCTAGCTACAACGA CGTCTCA	12859
6147	AGAGCGAC G CAGCGGCG	4111	CGCCGCTG GGCTAGCTACAACGA GTCGCTCT	12860
6150	GCGACGCA G CGGCGCGC	4112	GCGCGCCG GGCTAGCTACAACGA TGCGTCGC	12861
6153	ACGCAGCG G CGCGCGUC	4113	GACGCGCG GGCTAGCTACAACGA CGTGCCT	12862
6155	GCAGCGGC G CGCGUCAC	4114	GTGACGCG GGCTAGCTACAACGA GCCGCTGC	12863
6157	AGCGGCGC G CGUCACAC	4115	GTGTGACG GGCTAGCTACAACGA GCGCCGCT	12864
6159	CGGCGCGC G UCACACAA	4116	TTGTGTGA GGCTAGCTACAACGA GCGCGCCG	12865
6162	CGCGCGUC A CACAAUUC	4117	GATTGTG GGCTAGCTACAACGA GACGCGCG	12866
6164	CGCGUCAC A CAAUCCU	4118	AGGATTTG GGCTAGCTACAACGA GTGACGCG	12867
6168	UCACACAA A UCCUCUCC	4119	GGAGAGGA GGCTAGCTACAACGA TTGTGTGA	12868
6178	CCUCUCCA G CCUCACCA	4120	TGGTGAGG GGCTAGCTACAACGA TGGAGAGG	12869
6183	CCAGCCUC A CCAUCACU	4121	AGTGATGG GGCTAGCTACAACGA GAGGCTGG	12870
6186	GCCUCACC A UCACUCAG	4122	CTGAGTGA GGCTAGCTACAACGA GGTGAGGC	12871
6189	UCACCAUC A CUCAGCUG	4123	CAGCTGAG GGCTAGCTACAACGA GATGGTGA	12872
6194	AUCACUCA G CUGCUGAG	4124	CTCAGCAG GGCTAGCTACAACGA TGAGTGAT	12873
6197	ACUCAGCU G CUGAGGAG	4125	CTCCTCAG GGCTAGCTACAACGA AGCTGAGT	12874
6206	CUGAGGAG G CUCCAUCA	4126	TGATGGAG GGCTAGCTACAACGA CTCCTCAG	12875
6211	GAGGCUCC A UCAGUGGA	4127	TCCACTGA GGCTAGCTACAACGA GGAGCCTC	12876
6215	CUCCAUCA G UGGAUCAA	4128	TTGATCCA GGCTAGCTACAACGA TGATGGAG	12877
6219	AUCAGUGG A UCAAUGAG	4129	CTCATTGA GGCTAGCTACAACGA CCACTGAT	12878
6223	GUGGAUCA A UGAGGACU	4130	AGTCCTCA GGCTAGCTACAACGA TGATCCAC	12879
6229	CAAUGAGG A CUGCUCCA	4131	TGGAGCAG GGCTAGCTACAACGA CCTATTG	12880
6232	UGAGGACU G CUCCACGC	4132	GCGTGGAG GGCTAGCTACAACGA AGTCCTCA	12881
6237	ACUGCUCC A CGCAUGU	4133	ACATGGCG GGCTAGCTACAACGA GGAGCAGT	12882
6239	UGCUCAC G CCAUGUUC	4134	GAACATGG GGCTAGCTACAACGA GTGGAGCA	12883
6242	UCCACGCC A UGUUCCGG	4135	CCGGAACA GGCTAGCTACAACGA GCGTGGA	12884
6244	CACGCCAU G UCCCGCU	4136	AGCCGGAA GGCTAGCTACAACGA ATGGCGTG	12885
6250	AUGUCCG G CUCGUGGC	4137	GCCACGAG GGCTAGCTACAACGA CGGAACAT	12886
6254	UCCGGCUC G UGGCUAAG	4138	CTTAGCCA GGCTAGCTACAACGA GAGCCGGA	12887
6257	GGCUCGUG G CUAAGGGA	4139	TCCCTTAG GGCTAGCTACAACGA CACGAGCC	12888
6265	GCUAAGGG A UGUUUGGG	4140	CCCAAACA GGCTAGCTACAACGA CCCTTAGC	12889
6267	UAAGGGAU G UUUGGGAC	4141	GTCCCAA GGCTAGCTACAACGA ATCCCTTA	12890
6274	UGUUGGG A CUGGAUUA	4142	ATATCCAG GGCTAGCTACAACGA CCCAAACA	12891
6279	GGGACUGG A UAUGCACG	4143	CGTGCCATA GGCTAGCTACAACGA CCAGTCCC	12892
6281	GACUGGAU A UGCACGGU	4144	ACCGTGCA GGCTAGCTACAACGA ATCCAGTC	12893
6283	CUGGAUUA G CACGUGU	4145	ACACCGTG GGCTAGCTACAACGA ATATCCAG	12894
6285	GGAUAUGC A CGGUGUUG	4146	CAACACCG GGCTAGCTACAACGA GCATATCC	12895
6288	UAUGCACG G UGUUGACU	4147	AGTCAACA GGCTAGCTACAACGA CGTGCCATA	12896
6290	UGCACGGU G UUGACUGA	4148	TCAGTCAA GGCTAGCTACAACGA ACCGTGCA	12897
6294	CGGUGUUG A CUGACUUC	4149	GAAGTCAG GGCTAGCTACAACGA CAACACCG	12898
6298	GUUGACUG A CUUCAAGA	4150	TCTTGAAG GGCTAGCTACAACGA CAGTCAAC	12899
6306	ACUUCAAG A CCUGGCUU	4151	AAGCCAGG GGCTAGCTACAACGA CTGGAAGT	12900
6311	AAGACCUG G CUUCAGUC	4152	GACTGAAG GGCTAGCTACAACGA CAGGTCTT	12901
6317	UGGCUUCA G UCCAAGCU	4153	AGCTTGGA GGCTAGCTACAACGA TGAAGCCA	12902
6323	CAGUCCAA G CUCCUGCC	4154	GGCAGGAG GGCTAGCTACAACGA TTGGACTG	12903
6329	AAGCUCCU G CCGCGGUU	4155	AACCGCGG GGCTAGCTACAACGA AGGAGCTT	12904



6332	CUCCUGCC G CGGUUGCC	4156	GGCAACCG GGCTAGCTACAACGA GGCAGGAG	12905
6335	CUGCCGCG G UUGCCGGG	4157	CCCGGCAA GGCTAGCTACAACGA CGCGGCAG	12906
6338	CCGCGGUU G CCGGGAGU	4158	ACTCCCGG GGCTAGCTACAACGA AACCGCGG	12907
6345	UGCCGGGA G UCCCUUUC	4159	GAAAGGGA GGCTAGCTACAACGA TCCC GGCA	12908
6359	UUCUUCUC A UGCCAACG	4160	CGTTGGCA GGCTAGCTACAACGA GAGAAGAA	12909
6361	CUUCUCAU G CCAACGUG	4161	CACGTTGG GGCTAGCTACAACGA ATGAGAAG	12910
6365	UCAUGCCA A CGUGGGUA	4162	TACCCACG GGCTAGCTACAACGA TGGCATGA	12911
6367	AUGCCAAC G UGGGUACA	4163	TGTACCCA GGCTAGCTACAACGA GTTGGCAT	12912
6371	CAACGUGG G UACAGGGG	4164	CCCCTGTA GGCTAGCTACAACGA CCACGTTG	12913
6373	ACGUGGGU A CAGGGGGG	4165	CCCCCTG GGCTAGCTACAACGA ACCCACGT	12914
6381	ACAGGGGG G UCUGGCGG	4166	CCGCCAGA GGCTAGCTACAACGA CCCCCTGT	12915
6386	GGGUCUG G CGGGGAGA	4167	TCTCCCG GGCTAGCTACAACGA CAGACCCC	12916
6394	GCGGGGAG A CGGUAUCA	4168	TGATACCG GGCTAGCTACAACGA CTCCC GCG	12917
6397	GGGAGACG G UAUCAUGC	4169	GCATGATA GGCTAGCTACAACGA CGTCTCCC	12918
6399	GAGACGGU A UCAUGCAA	4170	TTGCATGA GGCTAGCTACAACGA ACCGTCTC	12919
6402	ACGGUAUC A UGCAAACC	4171	GGTTTGCA GGCTAGCTACAACGA GATACCGT	12920
6404	GGUAUCAU G CAAACCAC	4172	GTGGTTTG GGCTAGCTACAACGA ATGATACC	12921
6408	UCAUGCAA A CCACCGUC	4173	GCAGGTGG GGCTAGCTACAACGA TTGCATGA	12922
6411	UGCAAACC A CCUGCCCA	4174	TGGGCAGG GGCTAGCTACAACGA GGTTTGCA	12923
6415	AACCACTU G CCCAUGCG	4175	CGCATGGG GGCTAGCTACAACGA AGGTGGTT	12924
6419	ACCGCCC A UGCGGAGC	4176	GCTCCGCA GGCTAGCTACAACGA GGGCAGGT	12925
6421	CUGCCCAU G CGGAGCGC	4177	GCGCTCCG GGCTAGCTACAACGA ATGGGCAG	12926
6426	CAUGCGGA G CGCAGAU	4178	GATCTGCG GGCTAGCTACAACGA TCCGCATG	12927
6428	UGCGGAGC G CAGAUCAC	4179	GTGATCTG GGCTAGCTACAACGA GCTCCGCA	12928
6432	GAGCGCAG A UCACUGGA	4180	TCCAGTGA GGCTAGCTACAACGA CTGCGCTC	12929
6435	CGCAGAU A CUGGACAU	4181	ATGTCCAG GGCTAGCTACAACGA GATCTGCG	12930
6440	AUCACUGG A CAUGUCA	4182	TTGACATG GGCTAGCTACAACGA CCAGTGAT	12931
6442	CACUGGAC A UGUCAAGA	4183	TCTTGACA GGCTAGCTACAACGA GTCCAGTG	12932
6444	CUGGACAU G UCAAGAAC	4184	GTTCTTGA GGCTAGCTACAACGA ATGTCCAG	12933
6451	UGUCAAGA A CGGUUCCA	4185	TGGAACCG GGCTAGCTACAACGA TCTTGACA	12934
6454	CAAGAACG G UUCAUGA	4186	TCATGGAA GGCTAGCTACAACGA CTTCTTG	12935
6459	ACGGUUC A UGAGGAUC	4187	GATCCTCA GGCTAGCTACAACGA GGAACCGT	12936
6465	CCAUGAGG A UCGUCGGG	4188	CCCGACGA GGCTAGCTACAACGA CCTCATGG	12937
6468	UGAGGAUC G UCGGGCCU	4189	AGGCCCGA GGCTAGCTACAACGA GATCCTCA	12938
6473	AUCGUCGG G CCUAAGAC	4190	GTCTTAGG GGCTAGCTACAACGA CCGACGAT	12939
6480	GGCCUAAG A CCUGUAGC	4191	GCTACAGG GGCTAGCTACAACGA CTTAGGCC	12940
6484	UAGAGCCU G UAGCAACA	4192	TGTTGCTA GGCTAGCTACAACGA AGGTCTTA	12941
6487	GACUGUA G CAACACGU	4193	ACGTTGTA GGCTAGCTACAACGA TACAGGTC	12942
6490	CUGUAGCA A CACGUGGC	4194	GCCACGTG GGCTAGCTACAACGA TGCTACAG	12943
6492	GUAGCAAC A CGUGGCAU	4195	ATGCCACG GGCTAGCTACAACGA GTTGCTAC	12944
6494	AGCAACAC G UGGCAUGG	4196	CCATGCCA GGCTAGCTACAACGA GTGTTGCT	12945
6497	AACACGUG G CAUGGAAC	4197	GTTCCATG GGCTAGCTACAACGA CACGTGTT	12946
6499	CACGUGGC A UGGAACAU	4198	ATGTTCCA GGCTAGCTACAACGA GCCACGTG	12947
6504	GGCAUGGA A CAUUCCCC	4199	GGGGAATG GGCTAGCTACAACGA TCCATGCC	12948
6506	CAUGGAAC A UUCCCCAU	4200	ATGGGGAA GGCTAGCTACAACGA GTTCCATG	12949
6513	CAUUCCCC A UCAACGCA	4201	TGCGTTGA GGCTAGCTACAACGA GGGGAATG	12950
6517	CCCCAUCA A CGCAUACA	4202	TGTATGCG GGCTAGCTACAACGA TGATGGGG	12951
6519	CCAUCAAC G CAUACACC	4203	GGTGTATG GGCTAGCTACAACGA GTTGATGG	12952
6521	AUCAACGC A UACACCAC	4204	GTGGTGTA GGCTAGCTACAACGA GCGTTGAT	12953
6523	CAACGCAU A CACCACGG	4205	CCGTGTTG GGCTAGCTACAACGA ATGCGTTG	12954
6525	ACGCAUAC A CCACGGGC	4206	GCCCCTGG GGCTAGCTACAACGA GTATGCGT	12955
6528	CAUACACC A CGGGCCCC	4207	GGGGCCCC GGCTAGCTACAACGA GGTGTATG	12956
6532	CACCACGG G CCCUGCA	4208	TGCAGGGG GGCTAGCTACAACGA CCGTGGTG	12957
6538	GGGCCCCU G CACACCCU	4209	AGGGTTGT GGCTAGCTACAACGA AGGGCCCC	12958
6540	GCCCCUGC A CCCCUC	4210	GGAGGGTG GGCTAGCTACAACGA CGAGGGGC	12959
6542	CCCUGCAC A CCCUCCCC	4211	GGGGAGGG GGCTAGCTACAACGA GTGCAGGG	12960

6552	CCUCCCCG G CGCCAAAC	4212	GTTTGGCG GGCTAGCTACAACGA CGGGGAGG	12961
6554	UCCCCGGC G CCAAACUA	4213	TAGTTTGG GGCTAGCTACAACGA GCCGGGGA	12962
6559	GGCGCCAA A CUAUUCUA	4214	TAGAATAG GGCTAGCTACAACGA TTGGCGCC	12963
6562	GCCAAACU A UUCUAGGG	4215	CCCTAGAA GGCTAGCTACAACGA AGTTTGGC	12964
6570	AUUCUAGG G CGCUAUGG	4216	CCATAGCG GGCTAGCTACAACGA CCTAGAAT	12965
6572	UCUAGGGC G CUAUGGCG	4217	CGCCATAG GGCTAGCTACAACGA GCCCTAGA	12966
6575	AGGGCGCU A UGGCGGGU	4218	ACCCGCCA GGCTAGCTACAACGA AGCGCCCT	12967
6578	GCGCUAUG G CGGGUGGC	4219	GCCACCCG GGCTAGCTACAACGA CATAGCGC	12968
6582	UAUGGCGG G UGGCCGCU	4220	ATCGGCCA GGCTAGCTACAACGA CCGCCATA	12969
6585	GGCGGGUG G CCGCUGAG	4221	CTCAGCGG GGCTAGCTACAACGA CACCCGCC	12970
6588	GGGUGGCC G CUGAGGAG	4222	CTCCTCAG GGCTAGCTACAACGA GCCCACC	12971
6596	GCUGAGGA G UACGUGGA	4223	TCCACGTA GGCTAGCTACAACGA TCCTCAGC	12972
6598	UGAGGAGU A CGUGGAGG	4224	CCTCCACG GGCTAGCTACAACGA ACTCCTCA	12973
6600	AGGAGUAC G UGGAGGUU	4225	AACCTCCA GGCTAGCTACAACGA GTACTCCT	12974
6606	ACGUGGAG G UUACGCGG	4226	CCGCGTAA GGCTAGCTACAACGA CTCCACGT	12975
6609	UGGAGGUU A CGCGGGUG	4227	CACCCCGG GGCTAGCTACAACGA AACCTCCA	12976
6611	GAGGUUAC G CGGGUGGG	4228	CCCACCCG GGCTAGCTACAACGA GTAACCTC	12977
6615	UUACGCGG G UGGGGGAU	4229	ATCCCCCA GGCTAGCTACAACGA CCGCGTAA	12978
6622	GGUGGGGG A UUUCCACU	4230	AGTGGAAA GGCTAGCTACAACGA CCCCACC	12979
6628	GGAUUUCC A CUACGUGA	4231	TCACGTAG GGCTAGCTACAACGA GGAAATCC	12980
6631	UUUCCACU A CGUGACGG	4232	CCGTCACG GGCTAGCTACAACGA AGTGGAAA	12981
6633	UCCACUAC G UGACGGGC	4233	GCCCGTCA GGCTAGCTACAACGA GTAGTGGA	12982
6636	ACUACGUG A CGGGCAUG	4234	CATGCCCC GGCTAGCTACAACGA CACGTAGT	12983
6640	CGUGACGG G CAUGACCA	4235	TGGTCATG GGCTAGCTACAACGA CCGTCACG	12984
6642	UGACGGGC A UGACCACU	4236	AGTGGTCA GGCTAGCTACAACGA GCCCGTCA	12985
6645	CGGGCAUG A CCACUGAC	4237	GTCAGTGG GGCTAGCTACAACGA CATGCCCC	12986
6648	GCAUGACC A CUGACAAC	4238	GTTGTCTAG GGCTAGCTACAACGA GGTCATGC	12987
6652	GACCACUG A CAACGUAA	4239	TTACGTTG GGCTAGCTACAACGA CAGTGGTC	12988
6655	CACUGACA A CGUAAAAU	4240	ATTTTACG GGCTAGCTACAACGA TGTCAGTG	12989
6657	CUGACAAC G UAAAAUGC	4241	GCATTTTA GGCTAGCTACAACGA GTTGTCTAG	12990
6662	AACGUAAA A UGCCCUGG	4242	CACGGGCA GGCTAGCTACAACGA TTTACGTT	12991
6664	CGUAAAAU G CCCGUGCC	4243	GGCACGGG GGCTAGCTACAACGA ATTTTACG	12992
6668	AAAGGCCG G UGCCAGGU	4244	ACCTGGCA GGCTAGCTACAACGA GGGCATT	12993
6670	AUGCCCGU G CCAGGUUC	4245	GAACCTGG GGCTAGCTACAACGA ACGGGCAT	12994
6675	CGUGCCAG G UUCGCCCC	4246	GGCGGAA GGCTAGCTACAACGA GTGGCAGG	12995
6680	CAGGUUCC G CCCCCCGA	4247	TCGGGGGG GGCTAGCTACAACGA GGAACCTG	12996
6689	CCCCCCGA A UUCUUCAC	4248	GTGAAGAA GGCTAGCTACAACGA TCGGGGGG	12997
6696	AAUUCUUC A CGGAAGUG	4249	CACTTCCG GGCTAGCTACAACGA GAAGAATT	12998
6702	UCACGGAA G UGGAUGGG	4250	CCCATCCA GGCTAGCTACAACGA TTCCGTGA	12999
6706	GGAAGUGG A UGGGGUAC	4251	GTACCCCA GGCTAGCTACAACGA CCACTTCC	13000
6711	UGGAUGGG G UACGCCUG	4252	CAGGCGTA GGCTAGCTACAACGA CCCATCCA	13001
6713	GAUGGGGU A CGCCUGCA	4253	TGCAGGCG GGCTAGCTACAACGA ACCCCATC	13002
6715	UGGGGUAC G CCUGCACA	4254	TGTGCAGG GGCTAGCTACAACGA GTACCCCA	13003
6719	GUACGCCU G CACAGAAA	4255	TTTCTGTG GGCTAGCTACAACGA AGGCGTAC	13004
6721	ACGCCUGC A CAGAAACG	4256	CGTTTCTG GGCTAGCTACAACGA GCAGGCGT	13005
6727	GCACAGAA A CGCUCGGG	4257	CCGGAGCG GGCTAGCTACAACGA TTCTGTGC	13006
6729	ACAGAAAC G CUCCGGCG	4258	CGCCGGAG GGCTAGCTACAACGA GTTTCTGT	13007
6735	ACGCUCCG G CGUGUGGA	4259	TCCACACG GGCTAGCTACAACGA CGGAGCGT	13008
6737	GCUCCGGC G UGUGGACC	4260	GGTCCACA GGCTAGCTACAACGA GCCGGAGC	13009
6739	UCCGGCGU G UGGACCUC	4261	GAGGTCCA GGCTAGCTACAACGA ACGCCGGA	13010
6743	GCGUGUGG A CCUCUCCU	4262	AGGAGAGG GGCTAGCTACAACGA CCACACGC	13011
6752	CCUCUCCU A CGGGAGGA	4263	TCCTCCCG GGCTAGCTACAACGA AGGAGAGG	13012
6762	GGGAGGAG G UCACAUUC	4264	GAATGTGA GGCTAGCTACAACGA CTCCTCCC	13013
6765	AGGAGGUC A CAUUCAG	4265	CTGGAATG GGCTAGCTACAACGA GACCTCCT	13014
6767	GAGGUCAC A UUCCAGGU	4266	ACCTGGAA GGCTAGCTACAACGA GTGACCTC	13015
6774	CAUUCAG G UCGGGCUC	4267	GAGCCCGA GGCTAGCTACAACGA CTGGAATG	13016

6779	CAGGUCGG G CUCAACCA	4268	TGTTTGGG GGCTAGCTACAACGA CCGACCTG	13017
6784	CGGGCUCA A CCAAUACC	4269	GGTATTGG GGCTAGCTACAACGA TGAGCCCG	13018
6788	CUCAACCA A UACCUGGU	4270	ACCAGGTA GGCTAGCTACAACGA TGTTTGGG	13019
6790	CAACCAAU A CCUGGUUG	4271	CAACCAGG GGCTAGCTACAACGA ATTGGTTG	13020
6795	AAUACCUG G UUGGGUCA	4272	TGACCCAA GGCTAGCTACAACGA CAGGTATT	13021
6800	CUGGUUGG G UCACAGCU	4273	AGCTGTGA GGCTAGCTACAACGA CCAACCAG	13022
6803	GUUGGGUC A CAGCUCCC	4274	GGGAGCTG GGCTAGCTACAACGA GACCCAAC	13023
6806	GGGUCACA G CUCCCAUG	4275	CATGGGAG GGCTAGCTACAACGA TGTGACCC	13024
6812	CAGCUCCC A UGCGAGCC	4276	GGCTCGCA GGCTAGCTACAACGA GGGAGCTG	13025
6814	GCUCCCAU G CGAGCCCG	4277	CGGGCTCG GGCTAGCTACAACGA ATGGGAGC	13026
6818	CCAUGCAG G CCCGAACC	4278	GGTTCGGG GGCTAGCTACAACGA TCGCATGG	13027
6824	GAGCCCGA A CCGGAUGU	4279	ACATCCGG GGCTAGCTACAACGA TCGGGCTC	13028
6829	CGAACCGG A UGUAGCAG	4280	CTGTCTAC GGCTAGCTACAACGA CCGGTTTCG	13029
6831	AACCGGAU G UAGCAGUG	4281	CACCTGCTA GGCTAGCTACAACGA ATCCGGTT	13030
6834	CGGAUGUA G CAGUGCUC	4282	GAGCACTG GGCTAGCTACAACGA TACATCCG	13031
6837	AUGUAGCA G UGCUCACG	4283	CGTGAGCA GGCTAGCTACAACGA TGCTACAT	13032
6839	GUAGCAGU G CUCACGUC	4284	GACGTGAG GGCTAGCTACAACGA ACTGCTAC	13033
6843	CAGUGCUC A CGUCCAUG	4285	CATGGACG GGCTAGCTACAACGA GAGCACTG	13034
6845	GUGCUCAC G UCCAUGCU	4286	AGCATGGA GGCTAGCTACAACGA GTGAGCAC	13035
6849	UCACGUCC A UGCUCACC	4287	GGTGAGCA GGCTAGCTACAACGA GGACGTGA	13036
6851	ACGUCCAU G CUCACCGA	4288	TCCGTGAG GGCTAGCTACAACGA ATGGACGT	13037
6855	CCAUGCUC A CCGACCCC	4289	GGGGTCCG GGCTAGCTACAACGA GAGCATGG	13038
6859	GCUCACCG A CCCUCCCC	4290	GGGAGGGG GGCTAGCTACAACGA CGGTGAGC	13039
6868	CCCUCCCC A CAUUACAG	4291	CTGTAATG GGCTAGCTACAACGA GGGAGGGG	13040
6870	CCUCCAC A UUACAGGA	4292	TCCTGTAA GGCTAGCTACAACGA GTGGGAGG	13041
6873	CCCACAUU A CAGGAGAG	4293	CTCTCCTG GGCTAGCTACAACGA AATGTGGG	13042
6882	CAGGAGAG A CGGCUAAG	4294	CTTAGCCG GGCTAGCTACAACGA CTCTCCTG	13043
6885	GAGAGACG G CUAAGCGU	4295	ACGCTTAG GGCTAGCTACAACGA CGTCTCTC	13044
6890	ACGGCUAA G CGUAGGCU	4296	AGCCTACG GGCTAGCTACAACGA TTAGCCGT	13045
6892	GGCUAAGC G UAGGCGUG	4297	CGAGCTTA GGCTAGCTACAACGA CTTAGGCC	13046
6896	AAGCGUAG G CUGGCCAG	4298	CTGGCCAG GGCTAGCTACAACGA CTACGCTT	13047
6900	GUAGGCUG G CCAGGGGG	4299	CCCCCTGG GGCTAGCTACAACGA CAGCCTAC	13048
6908	GCCAGGGG G UCUCCCCC	4300	GGGGGAGA GGCTAGCTACAACGA CCCCTGGC	13049
6924	CCUCCUUG G CCAGCUCC	4301	GGAGCTGG GGCTAGCTACAACGA CAAGGAGG	13050
6928	CUUGGCCA G CUCCUCAG	4302	CTGAGGAG GGCTAGCTACAACGA TGGCCAAG	13051
6936	GCUCCUCA G CUAGCCAG	4303	CTGGCTAG GGCTAGCTACAACGA TGAGGAGC	13052
6940	CUCAGCUA G CCAGCUGU	4304	ACAGCTGG GGCTAGCTACAACGA TAGCTGAG	13053
6944	GCUAAGCA G CUGUCUGC	4305	GCAGACAG GGCTAGCTACAACGA TGGTAGGC	13054
6947	AGCCAGCU G UCUGCGCC	4306	GGCGCAGA GGCTAGCTACAACGA AGCTGGCT	13055
6951	AGCUGUCU G CGCCUUCU	4307	AGAAGGCG GGCTAGCTACAACGA AGACAGCT	13056
6953	CUGUCUGC G CCUUCUUC	4308	GAAGAAGG GGCTAGCTACAACGA GCAGACAG	13057
6966	CUUCGAAG G CGACAUAC	4309	GTATGTCG GGCTAGCTACAACGA CTTCGAAG	13058
6969	CGAAGGCG A CAUACAUU	4310	AATGTATG GGCTAGCTACAACGA CGCCTTCG	13059
6971	AAGGCGAC A UACAUUAC	4311	GTAATGTA GGCTAGCTACAACGA GTCGCCTT	13060
6973	GGCGACAU A CAUUACCC	4312	GGGTAATG GGCTAGCTACAACGA ATGTCGCC	13061
6975	CGACAUAC A UUACCCAA	4313	TTGGGTAA GGCTAGCTACAACGA GTATGTCG	13062
6978	CAUACAUU A CCAAUUUA	4314	ATATTGGG GGCTAGCTACAACGA AATGTATG	13063
6983	AUUACCCA A UAUGACUC	4315	GAGTCATA GGCTAGCTACAACGA TGGGTAAT	13064
6985	UACCCAUA A UGACUCCC	4316	GGGAGTCA GGCTAGCTACAACGA ATTGGGTA	13065
6988	CCAUAUAG A CUCCCCAG	4317	CTGGGGAG GGCTAGCTACAACGA CATATTGG	13066
6997	CUCCCCAG A CUUUGACC	4318	GGTCAAAG GGCTAGCTACAACGA CTGGGGAG	13067
7003	AGACUUUG A CCUCAUCG	4319	CGATGAGG GGCTAGCTACAACGA CAAAGTCT	13068
7008	UUGACCUC A UCGAGGCC	4320	GGCCTCGA GGCTAGCTACAACGA GAGGTCAA	13069
7014	UCAUCGAG G CCAACCUC	4321	GAGGTTGG GGCTAGCTACAACGA CTCGATGA	13070
7018	CGAGGCCA A CCUCUGU	4322	ACAGGAGG GGCTAGCTACAACGA TGGCTCG	13071
7025	AACCUCU G UGGCGGCA	4323	TGCCGCCA GGCTAGCTACAACGA AGGAGGTT	13072

7028	CUCCUGUG G CGGCAGGA	4324	TCCTGCCG GGCTAGCTACAACGA CACAGGAG	13073
7031	CUGUGGCG G CAGGAGAU	4325	ATCTCCTG GGCTAGCTACAACGA CGCCACAG	13074
7038	GGCAGGAG A UGGGCGGU	4326	ACCGCCCA GGCTAGCTACAACGA CTCCTGCC	13075
7042	GGAGAUGG G CGGUAACA	4327	TGTTACCG GGCTAGCTACAACGA CCACTCTCC	13076
7045	GAUGGGCG G UAACAUCA	4328	TGATGTTA GGCTAGCTACAACGA CGCCCATC	13077
7048	GGGCGGUA A CAUCACUC	4329	GAGTGATG GGCTAGCTACAACGA TACCGCCC	13078
7050	GCGGUAAC A UCACUCGC	4330	GCGAGTGA GGCTAGCTACAACGA GTTACCGC	13079
7053	GUAACAUC A CUCGCGUG	4331	CACGCGAG GGCTAGCTACAACGA GATGTTAC	13080
7057	CAUCACUC G CGUGGAGU	4332	ACTCCACG GGCTAGCTACAACGA GAGTGATG	13081
7059	UCACUCGC G UGAGUCA	4333	TGACTCCA GGCTAGCTACAACGA GCGAGTGA	13082
7064	CGCGUGGA G UCAGAGAA	4334	TTCTCTGA GGCTAGCTACAACGA TCCACGCG	13083
7072	GUCAGAGA A UAAGGUAG	4335	CTACCTTA GGCTAGCTACAACGA TCTCTGAC	13084
7077	AGAAUAAG G UAGUUACC	4336	GGTAACTA GGCTAGCTACAACGA CTTATTCT	13085
7080	AUAAGGUA G UUACCCUG	4337	CAGGGTAA GGCTAGCTACAACGA TACCTTAT	13086
7083	AGGUAGUU A CCCUGGAC	4338	GTCCAGGG GGCTAGCTACAACGA AACTACCT	13087
7090	UACCCUGG A CUCUUUUG	4339	CAAAAGAG GGCTAGCTACAACGA CCAGGGTA	13088
7099	CUCUUUUG A CCCGCUUC	4340	GAAGCGGG GGCTAGCTACAACGA CAAAAGAG	13089
7103	UUJGACCC G CUUCGAGC	4341	GCTCGAAG GGCTAGCTACAACGA GGGTCAAA	13090
7110	CGCJUCGA G CGGAGGAG	4342	CTCCTCCG GGCTAGCTACAACGA TCGAAGCG	13091
7120	GGAGGAGG A UGAGAGAG	4343	CTCTCTCA GGCTAGCTACAACGA CCTCTCTC	13092
7131	AGAGAGAG G UGUCCAUU	4344	AATGGACA GGCTAGCTACAACGA GTCTCTCT	13093
7133	AGAGAGGU G UCCAUUCC	4345	GGAATGGA GGCTAGCTACAACGA ACCTCTCT	13094
7137	AGGUGUCC A UUCCGGCG	4346	CGCCGGAA GGCTAGCTACAACGA GGACACCT	13095
7143	CCAUUCCG G CGGAGAUC	4347	GATCTCCG GGCTAGCTACAACGA CGGAATGG	13096
7149	CGGCGGAG A UCCUGCGG	4348	CCGCAGGA GGCTAGCTACAACGA CTCCGCCG	13097
7154	GAGAUCU G CGGAAUUC	4349	GATTTCGG GGCTAGCTACAACGA AGGATCTC	13098
7160	CUGCGGAA A UCCAAGAA	4350	TTCTTGGA GGCTAGCTACAACGA TTCCGCAG	13099
7169	UCCAAGAA G UUUCUUC	4351	GAAGGAAA GGCTAGCTACAACGA TTCTTGGA	13100
7179	UUCCUUA G CGUUACCC	4352	GGGTAACG GGCTAGCTACAACGA TGAAGGAA	13101
7181	CCUUCAGC G UUACCCAU	4353	ATGGGTAA GGCTAGCTACAACGA GCTGAAGG	13102
7184	UCAGCGUU A CCCAUUUG	4354	CATATGGG GGCTAGCTACAACGA AACGCTGA	13103
7188	CGUUACCC A UAUGGGCA	4355	TGCCCCATA GGCTAGCTACAACGA GGGTAACG	13104
7190	UUACCCAU A UGGGCACG	4356	CGTGCCCA GGCTAGCTACAACGA ATGGGTAA	13105
7194	CCAUAUGG G CACGCCCG	4357	CGGGCGTG GGCTAGCTACAACGA CCAATATG	13106
7196	AUAUGGGC A CGCCCGGA	4358	TCCGGTGG GGCTAGCTACAACGA GCCCATAT	13107
7198	AUGGGCAC G CCCGGAUU	4359	AATCCGGG GGCTAGCTACAACGA GTGCCCAT	13108
7204	ACGCCCGG A UUACAACC	4360	GGTTGTAA GGCTAGCTACAACGA CCGGGCGT	13109
7207	CCCGGAUU A CAACCCUC	4361	GAGGGTTG GGCTAGCTACAACGA AATCCGGG	13110
7210	GGAUUACA A CCCUCCAC	4362	GTGGAGGG GGCTAGCTACAACGA TGTAATCC	13111
7217	AACCCUCC A CUACUAGA	4363	TCTAGTAG GGCTAGCTACAACGA GGAGGGTT	13112
7220	CCUCCACU A CUAGAGCC	4364	GGCTCTAG GGCTAGCTACAACGA AGTGGAGG	13113
7226	CUACUAGA G CCCUGGAA	4365	TTCCAGGG GGCTAGCTACAACGA TCTAGTAG	13114
7237	CUGGAAAG A CCCAGACU	4366	AGTCTGGG GGCTAGCTACAACGA CTTTCCAG	13115
7243	AGACCCAG A CUACGUCC	4367	GGACGTAG GGCTAGCTACAACGA CTGGGTCT	13116
7246	CCCAGACU A CGUCCUC	4368	GAGGGACG GGCTAGCTACAACGA AGTCTGGG	13117
7248	CAGACUAC G UCCUCCG	4369	CGGAGGGA GGCTAGCTACAACGA GTAGTCTG	13118
7257	UCCUCCG G UGGUACAC	4370	GTGTACCA GGCTAGCTACAACGA CGGAGGGA	13119
7260	CUCCGGUG G UACACGGG	4371	CCCCTGTA GGCTAGCTACAACGA CACCGGAG	13120
7262	CCGGUGGU A CACGGGUG	4372	CACCCGTG GGCTAGCTACAACGA ACCACCGG	13121
7264	GGUGGUAC A CGGGUGCC	4373	GGCACCCG GGCTAGCTACAACGA GTACCACC	13122
7268	GUACACGG G UGCCCAUU	4374	AATGGGCA GGCTAGCTACAACGA CCGTGTAC	13123
7270	ACACGGGU G CCCAUUGC	4375	GCAATGGG GGCTAGCTACAACGA ACCCGTGT	13124
7274	GGGUGCCC A UUGCCACC	4376	GGTGGCAA GGCTAGCTACAACGA GGGCACCC	13125
7277	UGCCCAUU G CCACCUGC	4377	GCAGGTGG GGCTAGCTACAACGA AATGGGCA	13126
7280	CCAUUGCC A CCUGCCAA	4378	TTGGCAGG GGCTAGCTACAACGA GGCAATGG	13127
7284	UGCCACCU G CCAAGGCC	4379	GGCCTTGG GGCTAGCTACAACGA AGGTGGCA	13128

7290	CUGCCAAG G CCCCUCCA	4380	TGGAGGGG GGCTAGCTACAACGA CTTGGCAG	13129
7299	CCCUCCA A UACCACCU	4381	AGGTGGTA GGCTAGCTACAACGA TGGAGGGG	13130
7301	CCUCCAAU A CCACCUC	4382	GGAGGTGG GGCTAGCTACAACGA ATTGGAGG	13131
7304	CCAAUACC A CCUCCACG	4383	CGTGGAGG GGCTAGCTACAACGA GGTATTGG	13132
7310	CCACCUC A CGGAGGAA	4384	TTCCTCCG GGCTAGCTACAACGA GGAGGTGG	13133
7323	GGAAGAGG A CGGUUGU	4385	AACAACCG GGCTAGCTACAACGA CCTCTTCC	13134
7326	AGAGGACG G UUGUUCUG	4386	CAGAACAA GGCTAGCTACAACGA CGTCCTCT	13135
7329	GGACGGU G UUCUGACA	4387	TGTCAGAA GGCTAGCTACAACGA AACCGTCC	13136
7335	UUGUUCUG A CAGAGUCC	4388	GGACTCTG GGCTAGCTACAACGA CAGAACAA	13137
7340	CUGACAGA G UCCACCGU	4389	ACGGTGGA GGCTAGCTACAACGA TCTGTCTAG	13138
7344	CAGAGUCC A CCGUGUCU	4390	AGACACGG GGCTAGCTACAACGA GGACTCTG	13139
7347	AGUCCACC G UGUCUUCU	4391	AGAAGACA GGCTAGCTACAACGA GGTGGACT	13140
7349	UCCACCGU G UCUUCUGC	4392	GCAGAAGA GGCTAGCTACAACGA ACGGTGGA	13141
7356	UGUCUUCU G CCUUGGCG	4393	CGCCAAGG GGCTAGCTACAACGA AGAAGACA	13142
7362	CUGCCUUG G CGGAGCUC	4394	GAGCTCCG GGCTAGCTACAACGA CAAGGCAG	13143
7367	UUGGCGGA G CUCGCCAC	4395	GTGGCGAG GGCTAGCTACAACGA TCCGCCAA	13144
7371	CGGAGCUC G CCACAAAG	4396	CTTTGTGG GGCTAGCTACAACGA GAGCTCCG	13145
7374	AGCUCGCC A CAAAGACC	4397	GGTCTTTG GGCTAGCTACAACGA GGCGAGCT	13146
7380	CCACAAAG A CCUUCGGC	4398	GCCGAAGG GGCTAGCTACAACGA CTTTGTGG	13147
7387	GACCUUCG G CAGCUCUG	4399	CAGAGCTG GGCTAGCTACAACGA CGAAGGTC	13148
7390	CUUCGGCA G CUCUGAAU	4400	ATTGAGAG GGCTAGCTACAACGA TGCCGAAG	13149
7397	AGCUCUGA A UCAUCGGC	4401	GCCGATGA GGCTAGCTACAACGA TCAGAGCT	13150
7400	UCUGAAUC A UCGGCCGC	4402	GCGGCCGA GGCTAGCTACAACGA GATTGAGA	13151
7404	AAUCAUCG G CCGCUGAU	4403	ATCAGCGG GGCTAGCTACAACGA CGATGATT	13152
7407	CAUCGGCC G CUGAUAGA	4404	TCTATCAG GGCTAGCTACAACGA GGCCGATG	13153
7411	GGCCGCUG A UAGAGGUA	4405	TACCTCTA GGCTAGCTACAACGA CAGCGGCC	13154
7417	UGAUAGAG G UACGGCAA	4406	TTGCCGTA GGCTAGCTACAACGA CTCTATCA	13155
7419	AUAGAGGU A CGGCAACC	4407	GGTTGCCG GGCTAGCTACAACGA ACCTCTAT	13156
7422	GAGGUACG G CAACCGCC	4408	GGCGTTG GGCTAGCTACAACGA TGCTCTC	13157
7425	GUACGGCA A CCGCCCCC	4409	GGGGGCGG GGCTAGCTACAACGA TGCCGTAC	13158
7428	CGGCAACC G CCCCCCCC	4410	GGGGGGGG GGCTAGCTACAACGA GGTTGCCG	13159
7438	CCCCCCCG A CCAGACCU	4411	AGGTCTGG GGCTAGCTACAACGA CGGGGGGG	13160
7443	CCGACCAG A CCUCCAAU	4412	ATTGGAGG GGCTAGCTACAACGA CTGGTCGG	13161
7450	GACCUCCA A UGACGGUG	4413	CACCGTCA GGCTAGCTACAACGA TGGAGGTC	13162
7453	CUCCAAUG A CGGUGACG	4414	CGTCACCG GGCTAGCTACAACGA CATTGGAG	13163
7456	CAAUGACG G UGACGCAG	4415	CTGCGTGA GGCTAGCTACAACGA CGTCATTG	13164
7459	UGACGGUG A CGCAGGAU	4416	ATCCTGCG GGCTAGCTACAACGA CACCGTCA	13165
7461	ACGGUGAC G CAGGAUCC	4417	GGATCTTG GGCTAGCTACAACGA GTCACCGT	13166
7466	GACGCAGG A UCCGACGU	4418	ACGTCGGA GGCTAGCTACAACGA CCTGCGTC	13167
7471	AGGAUCCG A CGUUGAGU	4419	ACTCAACG GGCTAGCTACAACGA CGGATCCT	13168
7473	GAUCCGAC G UUGAGUCG	4420	CGACTCAA GGCTAGCTACAACGA GTCGGATC	13169
7478	GACGUUGA G UCGUACUC	4421	GAGTACGA GGCTAGCTACAACGA TCAACGTC	13170
7481	GUUGAGUC G UACUCCUC	4422	GAGGAGTA GGCTAGCTACAACGA GACTCAAC	13171
7483	UGAGUCGU A CUCCUCUA	4423	TAGAGGAG GGCTAGCTACAACGA ACGACTCA	13172
7491	ACUCCUCU A UGCCCCCC	4424	GGGGGGGG GGCTAGCTACAACGA AGAGGAGT	13173
7493	UCCUCUUA G CCCCCCU	4425	AGGGGGGG GGCTAGCTACAACGA ATAGAGGA	13174
7511	GAGGGGGA G CCGGGGGA	4426	TCCCCCGG GGCTAGCTACAACGA TCCCCCTC	13175
7519	GCCGGGGG A UCCCGAUC	4427	GATCGGGA GGCTAGCTACAACGA CCCCCGGC	13176
7525	GGAUCCCG A UCUCAGCG	4428	CGCTGAGA GGCTAGCTACAACGA CGGGATCC	13177
7531	CGAUUCA G CGACGGGU	4429	ACCCGTCG GGCTAGCTACAACGA TGAGATCG	13178
7534	UCUCAGCG A CGGGUCU	4430	AAGACCGG GGCTAGCTACAACGA CGCTGAGA	13179
7538	AGCGACCG G UCUUGGUC	4431	GACCAAGA GGCTAGCTACAACGA CCGTCGCT	13180
7544	GGGUUCUG G UCUACCGU	4432	ACGGTAGA GGCTAGCTACAACGA CAAGACCC	13181
7548	CUUGUCU A CCGUGAGC	4433	GCTACGGG GGCTAGCTACAACGA AGACCAAG	13182
7551	GGUCUACC G UGAGCGAA	4434	TTCTGCTA GGCTAGCTACAACGA GGTAGACC	13183
7555	UACCGUGA G CGAAGAGG	4435	CCTCTTCG GGCTAGCTACAACGA TCACGGTA	13184

7563	GCGAAGAG G CUGGCGAG	4436	CTCGCCAG GGCTAGCTACAACGA CTCTTCGC	13185
7567	AGAGGCUG G CGAGGAUG	4437	CATCCTCG GGCTAGCTACAACGA CAGCCTCT	13186
7573	UGGCGAGG A UGUCGUCU	4438	AGACGACA GGCTAGCTACAACGA CCTCGCCA	13187
7575	GCGAGGAU G UCGUCUGC	4439	GCAGACGA GGCTAGCTACAACGA ATCCTCGC	13188
7578	AGGAUGUC G UCGUCUGC	4440	GCAGCAGA GGCTAGCTACAACGA GACATCCT	13189
7582	UGUCGUCU G CUGCUCGA	4441	TCGAGCAG GGCTAGCTACAACGA AGACGACA	13190
7585	CGUCUGCU G CUCGAUGU	4442	ACATCGAG GGCTAGCTACAACGA AGCAGACG	13191
7590	GCUGCUCG A UGUCCUAC	4443	GTAGGACA GGCTAGCTACAACGA CGAGCAGC	13192
7592	UGCUCGAG G UCCUACAC	4444	GTGTAGGA GGCTAGCTACAACGA ATCGAGCA	13193
7597	GAUGUCCU A CACAUGGA	4445	TCCATGTG GGCTAGCTACAACGA AGGACATC	13194
7599	UGUCCUAC A CAUGGACG	4446	CGTCCATG GGCTAGCTACAACGA GTAGGACA	13195
7601	UCCUACAC A UGGACGGG	4447	CCCCTCCA GGCTAGCTACAACGA GTGTAGGA	13196
7605	ACACAUGG A CGGGCGCC	4448	GGCGCCCG GGCTAGCTACAACGA CCGTGTGT	13197
7609	AUGGACGG G CGCCUGA	4449	TCAGGGCG GGCTAGCTACAACGA CCGTCCAT	13198
7611	GGACGGGC G CCCUGAUC	4450	GATCAGGG GGCTAGCTACAACGA GCCCGTCC	13199
7617	GCGCCUG A UCACGCCA	4451	TGGCGTGA GGCTAGCTACAACGA CAGGGCGC	13200
7620	CCCUGAUC A CGCCAUGC	4452	GCATGGCG GGCTAGCTACAACGA GATCAGGG	13201
7622	CUGAUCAC G CCAUGCGC	4453	GCGCATGG GGCTAGCTACAACGA GTGATCAG	13202
7625	AUCACGCC A UGCGCUGC	4454	GCGCGCA GGCTAGCTACAACGA GGCGTGAT	13203
7627	CACGCCAU G CGCUGCGG	4455	CCGCAGCG GGCTAGCTACAACGA ATGGCGTG	13204
7629	CGCCAUGC G CUGCGGAG	4456	CTCCGCAG GGCTAGCTACAACGA GATGGCG	13205
7632	CAUGCGCU G CGGAGGAA	4457	TTCTCCG GGCTAGCTACAACGA AGCGCATG	13206
7642	GGAGGAAA G CAAGUUGC	4458	GCAACTTG GGCTAGCTACAACGA TTTCTCTC	13207
7646	GAAAGCAA G UUGCCCAU	4459	ATGGGCAA GGCTAGCTACAACGA TTGCTTTC	13208
7649	AGCAAGUU G CCCAUCAA	4460	TTGATGGG GGCTAGCTACAACGA AACTTGCT	13209
7653	AGUUGCCC A UCAACGCG	4461	CGCGTTGA GGCTAGCTACAACGA GGGCAACT	13210
7657	GCCCAUCA A CGCGUUGA	4462	TCAACGCG GGCTAGCTACAACGA TGATGGGG	13211
7659	CCAUCAAC G CGUUGAGC	4463	GCTCAACG GGCTAGCTACAACGA GTTGTATG	13212
7661	AUCAACGC G UUGAGCAA	4464	TTGCTCAA GGCTAGCTACAACGA GCGTTGAT	13213
7666	CGCGUUGA G CAACUCUU	4465	AAGAGTTG GGCTAGCTACAACGA TCAACCGC	13214
7669	GUUGAGCA A CUCUUGC	4466	GCAAAGAG GGCTAGCTACAACGA TGCTCAAC	13215
7676	AACUCUUU G CUGCGUCA	4467	TGACGCAG GGCTAGCTACAACGA AAAGAGTT	13216
7679	UCUUGUCU G CGUCACCA	4468	TGGTGACG GGCTAGCTACAACGA AGCAAAGA	13217
7681	UUUGCUGC G UCACCACA	4469	TGTGGTGA GGCTAGCTACAACGA GCAGCAAA	13218
7684	GCUGCGUC A CCACAACA	4470	TGTTGTGG GGCTAGCTACAACGA GACGCAGC	13219
7687	GCGUCACC A CAACAUGG	4471	CCATGTTG GGCTAGCTACAACGA GCTGACGC	13220
7690	UCACCACA A CAUGGUCU	4472	AGACCATG GGCTAGCTACAACGA TGTGGTGA	13221
7692	ACCACAAC A UGGUCUAC	4473	GTAGACCA GGCTAGCTACAACGA GTTGTGGT	13222
7695	ACAACAUG G UCUACGCU	4474	AGCGTAGA GGCTAGCTACAACGA CATGTTGT	13223
7699	CAUGGUCU A CGCUACAA	4475	TTGTAGCG GGCTAGCTACAACGA AGACCATG	13224
7701	UGGUCUAC G CUACAACA	4476	TGTTGTAG GGCTAGCTACAACGA GTAGACCA	13225
7704	UCUACGCU A CAACAUCU	4477	AGATGTTG GGCTAGCTACAACGA AGCGTAGA	13226
7707	ACGCUACA A CAUCUCGC	4478	GCGAGATG GGCTAGCTACAACGA TGTAGCGT	13227
7709	GCUACAAC A UCUCGCAG	4479	CTGCGAGA GGCTAGCTACAACGA GTGTAGC	13228
7714	AACAUCUC G CAGCGCAA	4480	TTGCGCTG GGCTAGCTACAACGA GAGATGTT	13229
7717	AUCUCGCA G CGCAAGCC	4481	GGCTTGCG GGCTAGCTACAACGA TGCGAGAT	13230
7719	CUCGCAGC G CAAGCCAG	4482	CTGGCTTG GGCTAGCTACAACGA GCTGCGAG	13231
7723	CAGCGCAA G CCAGCGGC	4483	GCCGCTGG GGCTAGCTACAACGA TTGCGCTG	13232
7727	GCAAGCCA G CGGCAGAA	4484	TTCTGCCG GGCTAGCTACAACGA TGGCTTGC	13233
7730	AGCCAGCG G CAGAAGAA	4485	TTCTTCTG GGCTAGCTACAACGA CGCTGGCT	13234
7740	AGAAGAAG G UCACCUUU	4486	AAAGGTGA GGCTAGCTACAACGA CTCTTCT	13235
7743	AGAAGGUC A CCUUUGAC	4487	GTCAAAGG GGCTAGCTACAACGA GACCTTCT	13236
7750	CACCUUUG A CAGACUGC	4488	GCAGTCTG GGCTAGCTACAACGA CAAAGGTG	13237
7754	UUUGACAG A CUGCAAGU	4489	ACTTGCAG GGCTAGCTACAACGA CTGTCAA	13238
7757	GACAGACU G CAAGUCCU	4490	AGGACTTG GGCTAGCTACAACGA AGTCTGTC	13239
7761	GACUGCAA G UCCUGGAC	4491	GTCCAGGA GGCTAGCTACAACGA TTGCAGTC	13240

7768	AGUCCUGG A CGACCACU	4492	AGTGGTCCG GGCTAGCTACAACGA CCAGGACT	13241
7771	CCUGGACG A CCACUACC	4493	GGTAGCTGG GGCTAGCTACAACGA CGTCCAGG	13242
7774	GGACGACC A CUACCGGG	4494	CCCGGTAG GGCTAGCTACAACGA GGTCGTCC	13243
7777	CGACCACU A CCGGGACG	4495	CGTCCCGG GGCTAGCTACAACGA AGTGGTCG	13244
7783	CUACCGGG A CGUGCUCU	4496	TGAGCACG GGCTAGCTACAACGA CCCGCTAG	13245
7785	ACCGGGAC G UGCUCAAG	4497	CTTGAGCA GGCTAGCTACAACGA GTCCCGGT	13246
7787	CGGGACGU G CUCAAGGA	4498	TCCTTGAG GGCTAGCTACAACGA ACGTCCCG	13247
7797	UCAAGGAG A UGAAGGCG	4499	CGCCTTCA GGCTAGCTACAACGA CTCCTTGA	13248
7803	AGAUGAAG G CGAAGGCG	4500	CGCCTTCG GGCTAGCTACAACGA CTTCTATCT	13249
7809	AGGCGAAG G CGUCCACA	4501	TGTGGACG GGCTAGCTACAACGA CTTCCGCT	13250
7811	GCGAAGGC G UCCACAGU	4502	ACTGTGGA GGCTAGCTACAACGA GCCTTCGC	13251
7815	AGGCGUCC A CAGUUAAG	4503	CTTAAGTG GGCTAGCTACAACGA GGACGCCT	13252
7818	CGUCCACA G UUAAGGCU	4504	AGCCTTAA GGCTAGCTACAACGA TGTGGACG	13253
7824	CAGUUAAG G CUAAACUU	4505	AAGTTTAG GGCTAGCTACAACGA CTTAACTG	13254
7829	AAGGCUAA A CUUCUAUC	4506	GATAGAAG GGCTAGCTACAACGA TTAGCCTT	13255
7835	AAACUUCU A UCCGUAGA	4507	TCTACGGA GGCTAGCTACAACGA AGAAGTTT	13256
7839	UUCUAUCC G UAGAGGAA	4508	TTCTCTTA GGCTAGCTACAACGA GGATAGAA	13257
7848	UAGAGGAA G CCUGCAGA	4509	TCTGCAGG GGCTAGCTACAACGA TTCCTCTA	13258
7852	GGAAGCCU G CAGACUGA	4510	TCAGTCTG GGCTAGCTACAACGA AGGCTTCC	13259
7856	GCCUGCAG A CUGACGCC	4511	TGGCGTCAG GGCTAGCTACAACGA CTGCAGGC	13260
7860	GCAGACUG A GCCTCCCA	4512	TGGGGGCG GGCTAGCTACAACGA CAGTCTGC	13261
7862	AGACUGAC G CCCCCACA	4513	TGTGGGGG GGCTAGCTACAACGA GTCAGTCT	13262
7868	ACGCCCCC A CAUUCGGC	4514	GCCGAATG GGCTAGCTACAACGA GGGGGCGT	13263
7870	GCCCCCAC A UUCGGCCA	4515	TGGCCGAA GGCTAGCTACAACGA GTGGGGGC	13264
7875	CACAUUCG G CCAGGUCC	4516	GGACCTGG GGCTAGCTACAACGA CGAATGTG	13265
7880	UCGGCCAG G UCCAAAUU	4517	AATTTGGA GGCTAGCTACAACGA CTGGCCGA	13266
7886	AGGUCCAA A UJUGGUUA	4518	TAACCAA GGCTAGCTACAACGA TTGGACCT	13267
7891	CAAAUUGG G UUAUGGGG	4519	CCCCATA GGCTAGCTACAACGA CAAATTTG	13268
7894	AUUUGGUU A UGGGGCAA	4520	TGCCCCA GGCTAGCTACAACGA AACCAAT	13269
7899	GUUAUGGG G CAAAGGAC	4521	GTCTTTTG GGCTAGCTACAACGA CCCATAAC	13270
7906	GGCAAAGG A CGUCCGGA	4522	TCCGGACG GGCTAGCTACAACGA CCTTTGCC	13271
7908	CAAAGGAC G UCCGGAAC	4523	GTTCCGGA GGCTAGCTACAACGA GTCCTTTG	13272
7915	CGUCCGGA A CCUAUCCA	4524	TGGATAGG GGCTAGCTACAACGA TCCGGACG	13273
7919	CGGAACCU A UCCAGCGG	4525	CCGCTGGA GGCTAGCTACAACGA AGGTTCCG	13274
7924	CCUAUCCA G CGGGGCCG	4526	CGGCCCCG GGCTAGCTACAACGA TGGATAGG	13275
7929	CCAGCGGG G CCGUCAAC	4527	GTTGACGG GGCTAGCTACAACGA CCCCTTGG	13276
7932	GCGGGGCC G UCAACCAC	4528	TGTGTTGA GGCTAGCTACAACGA GGCCCCGC	13277
7936	GGCCGUGA A CCACAUCC	4529	GGATGTGG GGCTAGCTACAACGA TGACGGCC	13278
7939	CGUCAACC A CAUCCGCU	4530	AGCGGATG GGCTAGCTACAACGA GGTGTGACG	13279
7941	UCAACCAC A UCCGCUCC	4531	GGAGCGGA GGCTAGCTACAACGA GTGGTTGA	13280
7945	CCACAUCC G CUCCGUGU	4532	ACACGGAG GGCTAGCTACAACGA GGATGTGG	13281
7950	UCCGCUCC G UGUGGAAG	4533	CTTCCACA GGCTAGCTACAACGA GGAGCGGA	13282
7952	CGCUCCGU G UGGAAGGA	4534	TCCTTCCA GGCTAGCTACAACGA ACGGAGCG	13283
7960	GUGGAAGG A CUUGCUGG	4535	CCAGCAAG GGCTAGCTACAACGA CCTTCCAC	13284
7964	AAGGACUU G CUGGAAGA	4536	TCTTCCAG GGCTAGCTACAACGA AAGTCTTT	13285
7972	GCUGGAAG A CACUGAGA	4537	TCTCAGTG GGCTAGCTACAACGA TCTCCAGC	13286
7974	UGGAAGAC A CUGAGACA	4538	TGTCTCAG GGCTAGCTACAACGA GTCTTCCA	13287
7980	ACACUGAG A CACCAAUU	4539	AATTGGTG GGCTAGCTACAACGA CTCAGTGT	13288
7982	ACUGAGAC A CCAAUUGA	4540	TCAATTGG GGCTAGCTACAACGA GTCTCAGT	13289
7986	AGACACCA A UUGAUACC	4541	GGTATCAA GGCTAGCTACAACGA TGGTGTCT	13290
7990	ACCAAUUG A UACCACCA	4542	TGGTGGTA GGCTAGCTACAACGA CAATTGGT	13291
7992	CAAUUGAU A CCACCAUC	4543	GATGGTGG GGCTAGCTACAACGA ATCAATTG	13292
7995	UUGAUACC A CCAUCAUG	4544	CATGATGG GGCTAGCTACAACGA GGTATCAA	13293
7998	AUACCACC A UCAUGGCA	4545	TGCCATGA GGCTAGCTACAACGA GGTGTAT	13294
8001	CCACCAUC A UGGCAAAA	4546	TTTTGCCA GGCTAGCTACAACGA GATGGTGG	13295
8004	CCAUCAUG G CAAAAAU	4547	ATTTTGTG GGCTAGCTACAACGA CATGATGG	13296



8011	GGCAAAAA A UGAGGUUU	4548	AAACCTCA GGCTAGCTACAACGA TTTTGTCC	13297
8016	AAAAUGAG G UUUUCUGC	4549	GCAGAAAA GGCTAGCTACAACGA CTCATTTT	13298
8023	GGUUUUUCU G CGUCCAAC	4550	GTTGGACG GGCTAGCTACAACGA AGAAAACC	13299
8025	UUUUCUGC G UCCAACCA	4551	TGGTTGGA GGCTAGCTACAACGA GCAGAAAA	13300
8030	UGCGUCCA A CCAGAGAA	4552	TTCTCTGG GGCTAGCTACAACGA TGGACGCA	13301
8044	GAAAGGAG G CCGCAAGC	4553	GCTTGCGG GGCTAGCTACAACGA CTCCTTTC	13302
8047	AGGAGGCC G CAAGCCAG	4554	CTGGCTTG GGCTAGCTACAACGA GGCCTCCT	13303
8051	GGCCGCAA G CCAGCUCG	4555	CGAGCTGG GGCTAGCTACAACGA TTGCGGCC	13304
8055	GCAAGCCA G CUCGCCUU	4556	AAGGCGAG GGCTAGCTACAACGA TGGCTTGC	13305
8059	GCCAGCUC G CUUAUCG	4557	CGATAAGG GGCTAGCTACAACGA GAGCTGGC	13306
8064	CUCGCCUU A UCGUGUUC	4558	GAACACGA GGCTAGCTACAACGA AAGCGGAG	13307
8067	GCCUUAUC G UGUUCCCA	4559	TGGGAACA GGCTAGCTACAACGA GATAAGGC	13308
8069	CUUAUCGU G UUCCCAGA	4560	TCTGGGAA GGCTAGCTACAACGA ACGATAAG	13309
8077	GUUCCAG A CUUGGGG	4561	CCCCAAG GGCTAGCTACAACGA CTGGGAAC	13310
8085	ACUUGGGG G UUCGUGUG	4562	CACACGAA GGCTAGCTACAACGA CCCAAGT	13311
8089	GGGGGUUC G UGUGUGCG	4563	CGCACACA GGCTAGCTACAACGA GAACCCCC	13312
8091	GGGUUCGU G UGUGCGAG	4564	CTCGCACA GGCTAGCTACAACGA ACGAACCC	13313
8093	GUUCGUGU G UGCAGAA	4565	TTCTCGCA GGCTAGCTACAACGA ACACGAAC	13314
8095	UCGUGUGU G CGAGAAAA	4566	TTTTCTCG GGCTAGCTACAACGA ACACACGA	13315
8103	GCGAGAAA A UGGCCCUU	4567	AAGGGCCA GGCTAGCTACAACGA TTTCTCGC	13316
8106	AGAAAUG G CCCUUUAC	4568	GTAAAGGG GGCTAGCTACAACGA CATTTTCT	13317
8113	GGCCUUU A CGACGUGG	4569	CCACGTCG GGCTAGCTACAACGA AAAGGGCC	13318
8116	CCUUUACG A CGUGGUCU	4570	AGACCACG GGCTAGCTACAACGA CGTAAAGG	13319
8118	UUUACGAC G UGGUCUCC	4571	GGAGACCA GGCTAGCTACAACGA GTCGTAAA	13320
8121	ACGACGUG G UCUCACC	4572	GGTGGAGA GGCTAGCTACAACGA CACGTCGT	13321
8127	UGGUCUCC A CCCUCCU	4573	AGGAAGGG GGCTAGCTACAACGA GGAGACCA	13322
8139	UUCUCAG G CCGUGAUG	4574	CATCACGG GGCTAGCTACAACGA CTGAGGAA	13323
8142	CUCAGGCC G UGAUGGGC	4575	GCCCATCA GGCTAGCTACAACGA GGCTGAG	13324
8145	AGGCCGUG A UGGGCUCU	4576	AGAGCCCA GGCTAGCTACAACGA CACGGCCT	13325
8149	CGUGAUGG G CUCUUCAU	4577	ATGAAGAG GGCTAGCTACAACGA CCATCACG	13326
8156	GGCUUUC A UACGGAUU	4578	AATCCGTA GGCTAGCTACAACGA GAAGAGCC	13327
8158	CUCUUCAU A CGGAUUC	4579	GGAATCCG GGCTAGCTACAACGA ATGAAGAG	13328
8162	UCAUACGG A UUCAGUA	4580	TACTGGAA GGCTAGCTACAACGA CCGTATGA	13329
8168	GGAUUCCA G UACUCUCC	4581	GGAGAGTA GGCTAGCTACAACGA TGGAAATC	13330
8170	AUUCAGU A CUCUCCUG	4582	CAGGAGAG GGCTAGCTACAACGA ACTGGAAT	13331
8180	UCUCCUGG G CAGCGGGU	4583	ACCCGCTG GGCTAGCTACAACGA CAGGAGA	13332
8183	CCUGGGCA G CGGGUUGA	4584	TCAACCCG GGCTAGCTACAACGA TGCCAGG	13333
8187	GGCAGCGG G UUGAGUUC	4585	GAACTCAA GGCTAGCTACAACGA CCGCTGCC	13334
8192	CGGUUGA G UUCUGGU	4586	ACCAGGAA GGCTAGCTACAACGA TCAACCCG	13335
8199	AGUCCUG G UGAAUGCC	4587	GGCATTCA GGCTAGCTACAACGA CAGGAACT	13336
8203	CCUGGUGA A UGCCUGGA	4588	TCCAGGCA GGCTAGCTACAACGA TCACCAGG	13337
8205	UGGUGAAU G CCUGGAAA	4589	TTTCCAGG GGCTAGCTACAACGA ATTCACCA	13338
8213	GCCUGGAA A UCAAAGAA	4590	TTCTTTGA GGCTAGCTACAACGA TTCCAGGC	13339
8222	UCAAGAA A UGCCCUAU	4591	ATAGGGCA GGCTAGCTACAACGA TTCTTTGA	13340
8224	AAAGAAU G CCCUAUGG	4592	CCATAGGG GGCTAGCTACAACGA ATTTCTTT	13341
8229	AAUGCCCU A UGGGCUUU	4593	AAAGCCCA GGCTAGCTACAACGA AGGGCATT	13342
8233	CCCUAUGG G CUUUGCAU	4594	ATGCAAAG GGCTAGCTACAACGA CCATAGGG	13343
8238	UGGGCUUU G CAUAUGAC	4595	GTCATATG GGCTAGCTACAACGA AAAGCCCA	13344
8240	GGCUUUGC A UAUGACAC	4596	GTGTCTAT GGCTAGCTACAACGA GCAAAGCC	13345
8242	CUUUGCAU A UGACACCC	4597	GGGTGTCA GGCTAGCTACAACGA ATGCAAAG	13346
8245	UGCAUAUG A CACCCGCU	4598	AGCGGGTG GGCTAGCTACAACGA CATATGCA	13347
8247	CAUAUGAC A CCCGUGU	4599	ACAGCGGG GGCTAGCTACAACGA GTCATATG	13348
8251	UGACACCC G CUGUUUCG	4600	CGAAACAG GGCTAGCTACAACGA GGGTGTCA	13349
8254	CACCCGCU G UUUCGACU	4601	AGTCGAAA GGCTAGCTACAACGA AGCGGGTG	13350
8260	CUGUUUCG A CUCAACAG	4602	CTGTTGAG GGCTAGCTACAACGA CGAAACAG	13351
8265	UCGACUCA A CAGUCACC	4603	GGTGACTG GGCTAGCTACAACGA TGAGTCGA	13352



8268	ACUCAACA G UCACCGAG	4604	CTCGGTGA GGCTAGCTACAACGA TGTGAGT	13353
8271	CAACAGUC A CCGAGAGU	4605	ACTCTCGG GGCTAGCTACAACGA GACTGTTG	13354
8278	CACCGAGA G UGACAUCC	4606	GGATGTCA GGCTAGCTACAACGA TCTCGGTG	13355
8281	CGAGAGUG A CAUCCGUG	4607	CACGGATG GGCTAGCTACAACGA CACTCTCG	13356
8283	AGAGUGAC A UCCGUGUC	4608	GACACGGA GGCTAGCTACAACGA GTCACTCT	13357
8287	UGACAUCC G UGUCCGAG	4609	CCTCGACA GGCTAGCTACAACGA GGATGTCA	13358
8289	ACAUCCGU G UCGAGGAG	4610	CTCCTCGA GGCTAGCTACAACGA ACGGATGT	13359
8297	GUCGAGGA G UCAAUUUA	4611	TAAATTGA GGCTAGCTACAACGA TCCTCGAC	13360
8301	AGGAGUCA A UUUACCAA	4612	TTGGTAAA GGCTAGCTACAACGA TGACTCCT	13361
8305	GUCAAUUU A CCAAUGUU	4613	AACATTGG GGCTAGCTACAACGA AAATTGAC	13362
8309	AUUUACCA A UGUUGUGA	4614	TCACAACA GGCTAGCTACAACGA TGGTAAAT	13363
8311	UUACCAAU G UUGUGACU	4615	AGTCACAA GGCTAGCTACAACGA ATTGGTAA	13364
8314	CCAAUGUU G UGACUUGG	4616	CCAAGTCA GGCTAGCTACAACGA AACATTGG	13365
8317	AUGUUGUG A CUUGGCCC	4617	GGGCCAAG GGCTAGCTACAACGA CACAACAT	13366
8322	GUGACUUG G CCCCCGAA	4618	TTCGGGGG GGCTAGCTACAACGA CAAGTCAC	13367
8331	CCCCCGAA G CCAGACAG	4619	CTGTCTGG GGCTAGCTACAACGA TTCGGGGG	13368
8336	GAAGCCAG A CAGGCCAU	4620	ATGGCCTG GGCTAGCTACAACGA CTGGCTTC	13369
8340	CCAGACAG G CCAUAAGG	4621	CCTTATGG GGCTAGCTACAACGA CTGTCTGG	13370
8343	GACAGGCC A UAAGGUCG	4622	CGACCTTA GGCTAGCTACAACGA GGCCTGTC	13371
8348	GCCAUAA G UCGUCAC	4623	GTGAGCGA GGCTAGCTACAACGA CTTATGGC	13372
8351	AUAAGGUC G CUCACAGA	4624	TCTGTGAG GGCTAGCTACAACGA GACCTTAT	13373
8355	GGUCGCUC A CAGAGCGG	4625	CCGCTCTG GGCTAGCTACAACGA GAGCGACC	13374
8360	CUCACAGA G CGGCUUUA	4626	TAAAGCCG GGCTAGCTACAACGA TCTGTGAG	13375
8363	ACAGAGCG G CUUUAUUA	4627	ATATAAAG GGCTAGCTACAACGA CGCTCTGT	13376
8368	GCGGCUUU A UAUCGGGG	4628	CCCCGATA GGCTAGCTACAACGA AAAGCCGC	13377
8370	GGCUUUAU A UCGGGGGU	4629	ACCCCCGA GGCTAGCTACAACGA ATAAAGCC	13378
8377	UAUCGGGG G UCCUCUGA	4630	TCAGAGGA GGCTAGCTACAACGA CCCCATA	13379
8385	GUCCUCUG A CUAAUUA	4631	TGAATTAG GGCTAGCTACAACGA CAGAGGAC	13380
8389	UCUGACUA A UUCAAAAG	4632	CTTTTGAA GGCTAGCTACAACGA TAGTCAGA	13381
8399	UCAAAAGG G CAGAACUG	4633	CAGTTCTG GGCTAGCTACAACGA CCTTTTGA	13382
8404	AGGGCAGA A CUGCGGUU	4634	AACCGCAG GGCTAGCTACAACGA TCTGCCCT	13383
8407	GCAGAACU G CGGUUAUC	4635	GATAACCG GGCTAGCTACAACGA AGTTCTGC	13384
8410	GAACUGCG G UUAUCGCC	4636	GGCGATAA GGCTAGCTACAACGA CGCAGTTC	13385
8413	CUGCGGUU A UCGCCGGU	4637	ACCGGCGA GGCTAGCTACAACGA AACCGCAG	13386
8416	CGGUUAUC G CCGUGGCC	4638	GGCACC GGCTAGCTACAACGA GATAACCG	13387
8420	UAUCGCCG G UGCCGCGC	4639	GCGCGCGA GGCTAGCTACAACGA CCGCGATA	13388
8422	UCGCCGGU G CCGCGCGA	4640	TCGCGCGG GGCTAGCTACAACGA ACCGGCGA	13389
8425	CCGGUGCC G CGCGAGCG	4641	CGCTCGCG GGCTAGCTACAACGA GGCACCGG	13390
8427	GGUGCCGC G CGAGCGGC	4642	GCCGCTCG GGCTAGCTACAACGA GCGGCACC	13391
8431	CCGCGCGA G CGGCGUGC	4643	GCACGCCG GGCTAGCTACAACGA TCGCGCGG	13392
8434	CGCGAGCG G CGUGCUGA	4644	TCAGCAGG GGCTAGCTACAACGA CGCTCGCG	13393
8436	CGAGCGGC G UGCUGACG	4645	CGTCAGCA GGCTAGCTACAACGA GCCGCTCG	13394
8438	AGCGGCGU G CUGACGAC	4646	GTCGTCAG GGCTAGCTACAACGA ACGCCGCT	13395
8442	GCGUGCUG A CGACCAGC	4647	GCTGCTCG GGCTAGCTACAACGA CAGCACGC	13396
8445	UGCUGACG A CCAGCUGU	4648	ACAGCTGG GGCTAGCTACAACGA CGTCAGCA	13397
8449	GACGACCA G CUGUGGUA	4649	TACCACAG GGCTAGCTACAACGA TGGTCGTC	13398
8452	GACCAGCU G UGUAAUA	4650	TATTACCA GGCTAGCTACAACGA AGCTGGTC	13399
8455	CAGCUGUG G UAAUACCC	4651	GGGTATTA GGCTAGCTACAACGA CACAGCTG	13400
8458	CUGUGGUA A UACCCUCA	4652	TGAGGGTA GGCTAGCTACAACGA TACCACAG	13401
8460	GUGGUAUA A CCCUCACA	4653	TGTGAGGG GGCTAGCTACAACGA ATTACCAC	13402
8466	AUACCCUC A CAUGUUAC	4654	GTAACATG GGCTAGCTACAACGA GAGGGTAT	13403
8468	ACCCUCAC A UGUUACUU	4655	AAGTAACA GGCTAGCTACAACGA GTGAGGGT	13404
8470	CCUCACAU G UUACUUGA	4656	TCAAGTAA GGCTAGCTACAACGA ATGTGAGG	13405
8473	CACAUGUU A CUUGAAAG	4657	CTTTCAAG GGCTAGCTACAACGA AACATGTG	13406
8481	ACUUGAAA G CCUCUGCG	4658	CGCAGAGG GGCTAGCTACAACGA TTTCAAGT	13407
8487	AAGCCUCU G CGGCCUGU	4659	ACAGGCCG GGCTAGCTACAACGA AGAGGCTT	13408

8490	CCUCUGCG G CCUGUCGA	4660	TCGACAGG GGCTAGCTACAACGA CGCAGAGG	13409
8494	UGCGGCCU G UCGAGCUG	4661	CAGCTCGA GGCTAGCTACAACGA AGGCCGCA	13410
8499	CCUGUCGA G CUGCGAAG	4662	CTTCGCGA GGCTAGCTACAACGA TCGACAGG	13411
8502	GUCGAGCU G CGAAGCUC	4663	GAGCTTCG GGCTAGCTACAACGA AGCTCGAC	13412
8507	GCUGCGAA G CUCCAGGA	4664	TCCTGGAG GGCTAGCTACAACGA TTCGCAGC	13413
8515	GCUCCAGG A CUGCACGA	4665	TCGTGCAG GGCTAGCTACAACGA CCTGGAGC	13414
8518	CCAGGACU G CACGAUGC	4666	GCATCGTG GGCTAGCTACAACGA AGTCTTGG	13415
8520	AGGACUGC A CGAUGCUC	4667	GAGCATCG GGCTAGCTACAACGA GCAGTCTT	13416
8523	ACUGCACG A UGCUCGUG	4668	CACGAGCA GGCTAGCTACAACGA CGTGCAGT	13417
8525	UGCACGAU G CUCGUGUG	4669	CACACGAG GGCTAGCTACAACGA ATCGTGCA	13418
8529	CGAUGCUC G UGUGUGGA	4670	TCCACACA GGCTAGCTACAACGA GAGCATCG	13419
8531	AUGCUCGU G UGUGGAGA	4671	TCTCCACA GGCTAGCTACAACGA ACGAGCAT	13420
8533	GCUCGUGU G UGGAGACG	4672	CGTCTCCA GGCTAGCTACAACGA ACAGGAGC	13421
8539	GUGUGGAG A CGACCUGG	4673	CCAGGTCG GGCTAGCTACAACGA CTCCACAC	13422
8542	UGGAGACG A CCUGGUCG	4674	CGACCAGG GGCTAGCTACAACGA CGTCTCCA	13423
8547	ACGACCUG G UCGUUAUC	4675	GATAACGA GGCTAGCTACAACGA CAGGTCGT	13424
8550	ACCUGGUC G UUAUCUGU	4676	ACAGATAA GGCTAGCTACAACGA GACCAGGT	13425
8553	UGGUGGUU A UCUGUGAA	4677	TTACACGA GGCTAGCTACAACGA AACGACCA	13426
8557	CGUUAUCU G UGAAAGUG	4678	CACTTTCA GGCTAGCTACAACGA AGATAACG	13427
8563	CUGUGAAA G UGCGGGGA	4679	TCCCCEGA GGCTAGCTACAACGA TTTACAG	13428
8565	GUGAAAGU G CGGGGACC	4680	GGTCCCCG GGCTAGCTACAACGA ACTTTTAC	13429
8571	GUGCGGGG A CCAAGAG	4681	CTCTTGGG GGCTAGCTACAACGA CCCCACAC	13430
8581	CCAAGAGG A CGCGGCGA	4682	TCGCCGCG GGCTAGCTACAACGA CCTCTTGG	13431
8583	AAGAGGAC G CGGCGAGC	4683	GCTCGCCG GGCTAGCTACAACGA GTCCTCTT	13432
8586	AGGACGCG G CGAGCCUA	4684	TAGGCTCG GGCTAGCTACAACGA CGCGTCTT	13433
8590	CGCGGCGA G CCUACGAG	4685	CTCGTAGG GGCTAGCTACAACGA TCGCCGCG	13434
8594	GCGAGCCU A CGAGUCUU	4686	AAGACTCG GGCTAGCTACAACGA AGGCTCGC	13435
8598	GCCUACGA G UCUUCACG	4687	CGTGAAGA GGCTAGCTACAACGA TCGTAGGC	13436
8604	GAGUCUUC A CGGAGGCU	4688	AGCCTCCG GGCTAGCTACAACGA GAAGCTC	13437
8610	UCACGGAG G CUAUGACU	4689	AGTCATAG GGCTAGCTACAACGA CTCCGTGA	13438
8613	CGGAGGCU A UGACUAGG	4690	CCTAGTCA GGCTAGCTACAACGA AGCCTCCG	13439
8616	AGGCUAUG A CUAGGUAC	4691	GTACCTAG GGCTAGCTACAACGA CATAGCCT	13440
8621	AUGACUAG G UACUCUGC	4692	GCAGAGTA GGCTAGCTACAACGA CTAGTCAT	13441
8623	GACUAGGU A CUCUGCCC	4693	GGGCAGAG GGCTAGCTACAACGA ACCTAGTC	13442
8628	GGUACUCU G CCCCCCCC	4694	GGGGGGGG GGCTAGCTACAACGA AGAGTACC	13443
8641	CCCCGGGG A CCGCCCCC	4695	GGGGCGGG GGCTAGCTACAACGA CCCCAGGG	13444
8645	GGGGACCC G CCCCACCC	4696	GGTTGGGG GGCTAGCTACAACGA GGGTCCCC	13445
8651	CCGCCCCA A CCGGAUA	4697	TATTCGGG GGCTAGCTACAACGA TGGGGCGG	13446
8657	CAACCGGA A UACGACUU	4698	AAGTCGTA GGCTAGCTACAACGA TCCGGTTG	13447
8659	ACCGGAU A CGACUUGG	4699	CCAAGTCG GGCTAGCTACAACGA ATTCCGGT	13448
8662	GGAAUACG A CUUGGAGU	4700	ACTCCAAG GGCTAGCTACAACGA CGTATTCC	13449
8669	GACUUGGA G UGAUAAC	4701	GTTATCAA GGCTAGCTACAACGA TCCAAGTC	13450
8673	UGGAGUUG A UAACAUA	4702	TGATGTTA GGCTAGCTACAACGA CAACTCCA	13451
8676	AGUUGAUA A CAUCAUGC	4703	GCATGATG GGCTAGCTACAACGA TATCAACT	13452
8678	UUGAUAAC A UCAUGCUC	4704	GAGCATGA GGCTAGCTACAACGA GTTATCAA	13453
8681	AUAACAUC A UGCUCCUC	4705	GAGGAGCA GGCTAGCTACAACGA GATGTTAT	13454
8683	AACAUCAU G CUCCUCCA	4706	TGGAGGAG GGCTAGCTACAACGA ATGATGTT	13455
8692	CUCCUCCA A CGUAUCAG	4707	CTGATACG GGCTAGCTACAACGA TGGAGGAG	13456
8694	CCUCCAAC G UAUCAGUU	4708	AACTGATA GGCTAGCTACAACGA GTTGGAGG	13457
8696	UCCAACGU A UCAGUUGC	4709	GCAACTGA GGCTAGCTACAACGA ACGTTGGA	13458
8700	ACGUUAUA G UUGCACAC	4710	GTGTGCAA GGCTAGCTACAACGA TGATACGT	13459
8703	UAUCAGUU G CACACGAU	4711	ATCGTGTG GGCTAGCTACAACGA AACTGATA	13460
8705	UCAGUUGC A CACGAUGC	4712	GCATCGTG GGCTAGCTACAACGA GCAACTGA	13461
8707	AGUUGCAC A CGAUGCAU	4713	ATGCATCG GGCTAGCTACAACGA GTGCAACT	13462
8710	UGCACACG A UGCAUCUG	4714	CAGATGCA GGCTAGCTACAACGA CGTGTGCA	13463
8712	CACACGAU G CAUCUGGC	4715	GCCAGATG GGCTAGCTACAACGA ATCGTGTG	13464

8714	CACGAUGC A UCUGGCAA	4716	TTGCCAGA GGCTAGCTACAACGA GCATCGTG	13465
8719	UGCAUCUG G CAAAAGGG	4717	CCCTTTTG GGCTAGCTACAACGA CAGATGCA	13466
8727	GCAAAAGG G UGUACUAC	4718	GTAGTACA GGCTAGCTACAACGA CCTTTTGC	13467
8729	AAAAGGGU G UACUACCU	4719	AGGTAGTA GGCTAGCTACAACGA ACCCTTTT	13468
8731	AAGGGUGU A CUACCUCU	4720	TGAGGTAG GGCTAGCTACAACGA ACACCCTT	13469
8734	GGUGUACU A CCUCACCC	4721	GGGTGAGG GGCTAGCTACAACGA AGTACACC	13470
8739	ACUACCUC A CCCGUGAC	4722	GTCACGGG GGCTAGCTACAACGA GAGGTAGT	13471
8743	CCUCACCC G UGACCCCA	4723	TGGGGTCA GGCTAGCTACAACGA GGGTGAGG	13472
8746	CACCCGUG A CCCCACCA	4724	TGGTGGGG GGCTAGCTACAACGA CACGGGTG	13473
8751	GUGACCCC A CCACCCCC	4725	GGGGGTGG GGCTAGCTACAACGA GGGGTCAC	13474
8754	ACCCCAAC A CCCCCCUU	4726	AAGGGGGG GGCTAGCTACAACGA GGTGGGGT	13475
8763	CCCCCUU G CGCGGGCU	4727	AGCCCGCG GGCTAGCTACAACGA AAGGGGGG	13476
8765	CCCUUGC G CGGGCUGC	4728	GCAGCCCG GGCTAGCTACAACGA GCAAGGGG	13477
8769	UUGCGCGG G CUGCGUGG	4729	CCACGCAG GGCTAGCTACAACGA CCGCGCAA	13478
8772	CGCGGGCU G CGUGGGAG	4730	CTCCACAG GGCTAGCTACAACGA AGCCCGCG	13479
8774	CGGGCUGC G UGGGAGAC	4731	GTCTCCCA GGCTAGCTACAACGA GCAGCCCG	13480
8781	CGUGGGAG A CAGCUAGA	4732	TCTAGCTG GGCTAGCTACAACGA CTCCCACG	13481
8784	GGGAGACA G CUAGAAGC	4733	GCTTCTAG GGCTAGCTACAACGA TGTCTCCC	13482
8791	AGCUAGAA G CACUCCAG	4734	CTGGAGTG GGCTAGCTACAACGA TTCTAGCT	13483
8793	CUAGAAGC A CUCCAGUC	4735	GACTGGAG GGCTAGCTACAACGA GCTTCTAG	13484
8799	GCACUCCA G UCAACUCC	4736	GGAGTTGA GGCTAGCTACAACGA TGGAGTGC	13485
8803	UCCAGUCA A CUCCUGGC	4737	GCCAGGAG GGCTAGCTACAACGA TGACTGGA	13486
8810	AACUCCUG G CUAGGCAA	4738	TGCTTAGG GGCTAGCTACAACGA CAGGAGTT	13487
8815	CUGGCUAG G CAACAUCU	4739	TGATGTTG GGCTAGCTACAACGA GTAGCCAG	13488
8818	GCUAGGCA A CAUCAUCA	4740	TGATGATG GGCTAGCTACAACGA TGCCTAGC	13489
8820	UAGGCAAC A UCAUCAUG	4741	CATGATGA GGCTAGCTACAACGA GTTGCCTA	13490
8823	GCAACAUC A UCAUGUUU	4742	AAACATGA GGCTAGCTACAACGA GATGTTGC	13491
8826	ACAUCAUC A UGUUUGCA	4743	TGCAACA GGCTAGCTACAACGA GATGATGT	13492
8828	AUCAUCAU G UUUGCACC	4744	GGTGCAA GGCTAGCTACAACGA ATGATGAT	13493
8832	UCAUGUUU G CACCCACU	4745	AGTGGGTG GGCTAGCTACAACGA AAACATGA	13494
8834	AUGUUUGC A CCCACUCU	4746	AGAGTGGG GGCTAGCTACAACGA GCAAACAT	13495
8838	UUGCACCC A CUCUAUGG	4747	CCATAGAG GGCTAGCTACAACGA GGGTGCAA	13496
8843	CCCACUCU A UGGGUAAG	4748	CTTACCCA GGCTAGCTACAACGA AGAGTGGG	13497
8847	CUCUAUGG G UAAGGAUG	4749	CATCCTTA GGCTAGCTACAACGA CCATAGAG	13498
8853	GGGUAAGG A UGAUUCUG	4750	CAGAATCA GGCTAGCTACAACGA CCTTACCC	13499
8856	UAAGGAUG A UUCUGAUG	4751	CATCAGAA GGCTAGCTACAACGA CATCCTTA	13500
8862	UGAUUCUG A UGACUCAC	4752	GTGAGTCA GGCTAGCTACAACGA CAGAATCA	13501
8865	UUCUGAUG A CUCACUUC	4753	GAAGTGAG GGCTAGCTACAACGA CATCAGAA	13502
8869	GAUGACUC A CUUCUUCU	4754	AGAAGAAG GGCTAGCTACAACGA GAGTCATC	13503
8880	UCUUCUCC A UCCUUCUA	4755	TAGAAGGA GGCTAGCTACAACGA GGAGAAGA	13504
8889	UCCUUCUA G CCCAGGAG	4756	CTCCTGGG GGCTAGCTACAACGA TAGAAGGA	13505
8897	GCCCAGGA G CAACUUGA	4757	TCAAGTTG GGCTAGCTACAACGA TCCTGGGC	13506
8900	CAGGAGCA A CUUGAGAA	4758	TTCTCAAG GGCTAGCTACAACGA TGCTCCTG	13507
8910	UUGAGAAA G CCCUAGAC	4759	GTCTAGGG GGCTAGCTACAACGA TTTCTCAA	13508
8917	AGCCCUAG A CUGCCAGA	4760	TCTGGCAG GGCTAGCTACAACGA CTAGGGCT	13509
8920	CCUAGACU G CCAGAUUCU	4761	AGATCTGG GGCTAGCTACAACGA AGTCTAGG	13510
8925	ACUGCCAG A UCUACGGG	4762	CCCGTAGA GGCTAGCTACAACGA CTGGCAGT	13511
8929	CCAGAUUC A CGGGGCUU	4763	AAGCCCGG GGCTAGCTACAACGA AGATCTGG	13512
8934	UCUACGGG G CUUGUUAC	4764	GTAACAAG GGCTAGCTACAACGA CCCGTAGA	13513
8938	CGGGGCUU G UUACUCCA	4765	TGGAGTAA GGCTAGCTACAACGA AAGCCCCG	13514
8941	GGCUUGUU A CUCCAUG	4766	CAATGGAG GGCTAGCTACAACGA AACAAGCC	13515
8946	GUUACUCC A UUGAGCCA	4767	TGGCTCAA GGCTAGCTACAACGA GGAGTAAC	13516
8951	UCCAUUGA G CCACUUGA	4768	TCAAGTGG GGCTAGCTACAACGA TCAATGGA	13517
8954	AUUGAGCC A CUUGACCU	4769	AGGTCAAG GGCTAGCTACAACGA GGCTCAAT	13518
8959	GCCACUUG A CCUACCUC	4770	GAGGTAGG GGCTAGCTACAACGA CAAGTGGC	13519
8963	CUUGACCU A CCUCAGAU	4771	ATCTGAGG GGCTAGCTACAACGA AGGTCAAG	13520

8970	UACCUCAG A UCAUUCAG	4772	CTGAATGA GGCTAGCTACAACGA CTGAGGTA	13521
8973	CUCAGAUC A UUCAGCGA	4773	TCGCTGAA GGCTAGCTACAACGA GATCTGAG	13522
8978	AUCAUUA G CGACUCCA	4774	TGGAGTCG GGCTAGCTACAACGA TGAATGAT	13523
8981	AUUCAGCG A CUCCAUGG	4775	CCATGGAG GGCTAGCTACAACGA CGCTGAAT	13524
8986	GCGACUCC A UGGUCUUA	4776	TAAGACCA GGCTAGCTACAACGA GGAGTCGC	13525
8989	ACUCCAUG G UCUUAGCG	4777	CGCTAAGA GGCTAGCTACAACGA CATGGAGT	13526
8995	UGGUCUUA G CGCAUUUU	4778	AAAAATG GGCTAGCTACAACGA TAAGACCA	13527
8997	GUCUUAGC G CAUUUUCA	4779	TGAAAATG GGCTAGCTACAACGA GCTAAGAC	13528
8999	CUUAGCGC A UUUUCACU	4780	AGTGAAAA GGCTAGCTACAACGA GCGCTAAG	13529
9005	GCAUUUUC A CUCCAUAU	4781	CTATGGAG GGCTAGCTACAACGA GAAAATGC	13530
9010	UUCACUCC A UAGUUACU	4782	AGTAACTA GGCTAGCTACAACGA GGAGTGAA	13531
9013	ACUCCAUA G UUACUCCC	4783	GGGAGTAA GGCTAGCTACAACGA TATGGAGT	13532
9016	CCAUAUUA A CUCCCCAG	4784	CTGGGGAG GGCTAGCTACAACGA AACTATGG	13533
9025	CUCCCCAG G UGAAAUCA	4785	TGATTTCA GGCTAGCTACAACGA CTGGGGAG	13534
9030	CAGGUGAA A UCAAUAGG	4786	CCTATTGA GGCTAGCTACAACGA TTCACCTG	13535
9034	UGAAAUCA A UAGGGUGG	4787	CCACCCTA GGCTAGCTACAACGA TGATTTCA	13536
9039	UCAAUAGG G UGGCAUCA	4788	TGATGCCA GGCTAGCTACAACGA CCTATTGA	13537
9042	AUAGGGUG G CAUCAUGC	4789	GCATGATG GGCTAGCTACAACGA CACCCTAT	13538
9044	AGGGUGGC A UCAUGCCU	4790	AGGCATGA GGCTAGCTACAACGA GCCACCCT	13539
9047	GUGGCAUC A UGCCUCAG	4791	CTGAGGCA GGCTAGCTACAACGA GATGCCAC	13540
9049	GGCAUCAU G CCUCAGGA	4792	TCCTGAGG GGCTAGCTACAACGA ATGATGCC	13541
9059	CUCAGGAA A CUUGGGGU	4793	ACCCCAAG GGCTAGCTACAACGA TTCCTGAG	13542
9066	AACUUGGG G UACCACCC	4794	GGGTGGTA GGCTAGCTACAACGA CCCAAGTT	13543
9068	CUUGGGGU A CCACCCUU	4795	AAGGGTGG GGCTAGCTACAACGA ACCCCAAG	13544
9071	GGGGUACC A CCCUUGCG	4796	CGCAAGGG GGCTAGCTACAACGA GGTACCCC	13545
9077	CCACCCUU G CGAACCUG	4797	CAGGTTTC GGCTAGCTACAACGA AAGGGTGG	13546
9081	CCUUGCGA A CCUGGAGA	4798	TCTCCAGG GGCTAGCTACAACGA TCGCAAGG	13547
9089	ACCUGGAG A CAUCGGGC	4799	GCCCGATG GGCTAGCTACAACGA CTCCAGGT	13548
9091	CUGGAGAC A UCGGGCCA	4800	TGGCCCCG GGCTAGCTACAACGA GTCTCCAG	13549
9096	GACAUCGG G CCAGAAGU	4801	ACTTCTGG GGCTAGCTACAACGA CCGATGTC	13550
9103	GGCCAGAA G UGUUCGCG	4802	CGCGAACA GGCTAGCTACAACGA TTCTGGCC	13551
9105	CCAGAAGU G UUCGCGCU	4803	AGCGCGAA GGCTAGCTACAACGA ACTTCTGG	13552
9109	AAGUGUUC G CGCUAAGC	4804	GCTTAGCG GGCTAGCTACAACGA GAACACTT	13553
9111	GUGUUCGC G CUAAAGUA	4805	TAGCTTAG GGCTAGCTACAACGA GCGAACAC	13554
9116	CGCGUAA G CUACUGUC	4806	GACAGTAG GGCTAGCTACAACGA TTAGCGCG	13555
9119	GCUAAGCU A CUGUCCA	4807	TGGGACAG GGCTAGCTACAACGA AGCTTAGC	13556
9122	AAGCUACU G UCCCAGGG	4808	CCCTGGGA GGCTAGCTACAACGA AGTAGCTT	13557
9138	GGGGGAGG G CCGCCACC	4809	GGTGGCGG GGCTAGCTACAACGA CTTCCCCC	13558
9141	GGAGGGCC G CCACCUGU	4810	ACAGGTGG GGCTAGCTACAACGA GGCCCTCC	13559
9144	GGGCGGCC A CCUGUGGC	4811	GCCACAGG GGCTAGCTACAACGA GGCGGCCC	13560
9148	CGCCACCU G UGGCAGGU	4812	ACCTGCCA GGCTAGCTACAACGA AGGTGGCG	13561
9151	CACCUGUG G CAGGUACC	4813	GGTACCTG GGCTAGCTACAACGA CACAGGTG	13562
9155	UGUGGCAG G UACCUCUU	4814	AAGAGGTA GGCTAGCTACAACGA CTGCCACA	13563
9157	UGGCAGGU A CCUCUUA	4815	TGAAGAGG GGCTAGCTACAACGA ACCTGCCA	13564
9166	CCUCUUA A CUGGGCAG	4816	CTGCCAGG GGCTAGCTACAACGA TGAAGAGG	13565
9171	UCAACUGG G CAGUAAAG	4817	CTTTACTG GGCTAGCTACAACGA CCAGTTGA	13566
9174	ACUGGGCA G UAAAGACC	4818	GGTCTTTA GGCTAGCTACAACGA TGCCAGT	13567
9180	CAGUAAAG A CCAAACUC	4819	GAGTTTGG GGCTAGCTACAACGA CTTTACTG	13568
9185	AAGACCAA A CUCAAACU	4820	AGTTTGAG GGCTAGCTACAACGA TTGGTCTT	13569
9191	AAACUCAA A CUCACUCC	4821	GGAGTGAG GGCTAGCTACAACGA TTGAGTTT	13570
9195	UCAAACUC A CUCCAAUC	4822	GATTGGAG GGCTAGCTACAACGA GAGTTTGA	13571
9201	UCACUCCA A UCCCAGCU	4823	AGCTGGGA GGCTAGCTACAACGA TGGAGTGA	13572
9207	CAAUCCCA G CUGCGUCU	4824	AGACGCAG GGCTAGCTACAACGA TGGGATTG	13573
9210	UCCCAGCU G CGUCUCAG	4825	CTGAGACG GGCTAGCTACAACGA AGCTGGGA	13574
9212	CCAGCUGC G UCUCAGUU	4826	AACTGAGA GGCTAGCTACAACGA GCAGCTGG	13575
9218	GCGUCUCA G UUGGACUU	4827	AAGTCCAA GGCTAGCTACAACGA TGAGACGC	13576

9223	UCAGUUGG A CUUGUCCA	4828	TGGACAAG GGCTAGCTACAACGA CCAACTGA	13577
9227	UUGGACUU G UCCAACUG	4829	CAGTTGGA GGCTAGCTACAACGA AAGTCCAA	13578
9232	CUUGUCCA A CUGGUUCG	4830	CGAACCAG GGCTAGCTACAACGA TGGACAAG	13579
9236	UCCAACUG G UUCGUUGC	4831	GCAACGAA GGCTAGCTACAACGA CAGTTGGA	13580
9240	ACUGGUUC G UUGCUGGC	4832	GCCAGCAA GGCTAGCTACAACGA GAACCACT	13581
9243	GGUUCGUU G CUGGCUAC	4833	GTAGCCAG GGCTAGCTACAACGA AACGAACC	13582
9247	CGUUGCUG G CUACAGCG	4834	CGCTGTAG GGCTAGCTACAACGA CAGCAACG	13583
9250	UGCUGGCU A CAGCGGGG	4835	CCCCGCTG GGCTAGCTACAACGA AGCCAGCA	13584
9253	UGGCUACA G CGGGGGAG	4836	CTCCCCCG GGCTAGCTACAACGA TGTAAGCA	13585
9262	CGGGGGAG A CGUGUUAUC	4837	GATACACG GGCTAGCTACAACGA CTCCCCCG	13586
9264	GGGGAGAC G UGUUAUCAC	4838	GTGATACA GGCTAGCTACAACGA GTCTCCCC	13587
9266	GGAGACGU G UAUACAG	4839	CTGTGATA GGCTAGCTACAACGA ACGTCTCC	13588
9268	AGACGUGU A UCACAGCC	4840	GGCTGTGA GGCTAGCTACAACGA ACACGTCT	13589
9271	CGUGUAUC A CAGCCUGU	4841	ACAGGCTG GGCTAGCTACAACGA GATACACG	13590
9274	GUAUCACA G CCUGUCUC	4842	GAGACAGG GGCTAGCTACAACGA TGTGATAC	13591
9278	CACAGCCU G UCUCGUGC	4843	GCACGAGA GGCTAGCTACAACGA AGGCTGTG	13592
9283	CCUGUCUC G UGCCCCGAC	4844	GTCGGGCA GGCTAGCTACAACGA GAGACAGG	13593
9285	UGUCUCGU G CCCGACCC	4845	GGGTCGGG GGCTAGCTACAACGA ACGAGACA	13594
9290	CGUGCCCCG A CCCCGCUG	4846	CAGCGGGG GGCTAGCTACAACGA CGGGCACC	13595
9295	CCGACCCC G CUGGUUCA	4847	TGAACCAG GGCTAGCTACAACGA GGGGTGGG	13596
9299	CCCCGCUG G UUCAUGCU	4848	AGCATGAA GGCTAGCTACAACGA CAGCGGGG	13597
9303	GCUGGUUC A UGCUUUGC	4849	GCAAAGCA GGCTAGCTACAACGA GAACCAGC	13598
9305	UGGUUCAU G CUUUGCCU	4850	AGGCAAAG GGCTAGCTACAACGA ATGAACCA	13599
9310	CAUGCUUU G CCUACUCC	4851	GGAGTAGG GGCTAGCTACAACGA AAGCATG	13600
9314	CUUUGCCU A CUCCUACU	4852	AGTAGGAG GGCTAGCTACAACGA AGGCAAAG	13601
9320	CUACUCCU A CUCUCCGU	4853	ACGGAGAG GGCTAGCTACAACGA AGGAGTAG	13602
9327	UACUCUCC G UAGGGGUA	4854	TACCCCTA GGCTAGCTACAACGA GGAGAGTA	13603
9333	CCGUAGGG G UAGGCAUC	4855	GATGCCTA GGCTAGCTACAACGA CCCTACGG	13604
9337	AGGGGUAG G CAUCUACC	4856	GGTAGATG GGCTAGCTACAACGA CTACCCCT	13605
9339	GGGUAGGC A UCUACCUG	4857	CAGGTAGA GGCTAGCTACAACGA GCCTACCC	13606
9343	AGGCAUCU A CCUGCUCC	4858	GGAGCAGG GGCTAGCTACAACGA AGATGCCT	13607
9347	AUCUACCU G CUCCCCAA	4859	TTGGGGAG GGCTAGCTACAACGA AGGTAGAT	13608
9355	GCUCCCCA A CCGAUGAA	4860	TTCATCGG GGCTAGCTACAACGA TGGGGAGC	13609
9359	CCCAACCG A UGAACAGG	4861	CCTGTTCA GGCTAGCTACAACGA CGGTTGGG	13610
9363	ACCGAUGA A CAGGGAGC	4862	GCTCCCTG GGCTAGCTACAACGA TCATCGGT	13611
9370	AACAGGGA G CUAAACAC	4863	GTGTTTAG GGCTAGCTACAACGA TCCCTGTT	13612
9375	GGAGCUAA A CACUCCAG	4864	CTGGAGTG GGCTAGCTACAACGA TTAGCTCC	13613
9377	AGCUAAAC A CUCCAGGC	4865	GCCTGGAG GGCTAGCTACAACGA GTTTAGCT	13614
9384	CACUCCAG G CCAAUAGG	4866	CCTATTGG GGCTAGCTACAACGA CTGGAGTG	13615
9388	CCAGGCCA A UAGGCCAU	4867	ATGGCCTA GGCTAGCTACAACGA TGGCCTGG	13616
9392	GCCAAUAG G CCAUCCCG	4868	CGGGATGG GGCTAGCTACAACGA CTATTGGC	13617
9395	AAUAGGCC A UCCCGUUU	4869	AAACGGGA GGCTAGCTACAACGA GGCCTATT	13618
9400	GCCAUCCC G UUUUUUUU	4870	AAAAAAA GGCTAGCTACAACGA GGGATGGC	13619

Input Sequence = HPCK1S1. Cut Site = R/Y

Arm Length = 8. Core Sequence = GGCTAGCTACAACGA

HPCK1S1 Hepatitis C virus (strain HCV-1b, clone HCV-K1-S1), complete genome; acc#  
gi|1030702|dbj|D50483.1; 9410 nt

Table XIX: HCV minus strand DNzyme and Substrate Sequence

Pos	Substrate	SeqID	DNzyme	SeqID
9413	AAAAAAA A CGGGAUGG	4871	CCATCCCCG GGCTAGCTACAACGA TTTT	13620
9408	AAAACGGG A UGGCCUAU	4872	ATAGGCCA GGCTAGCTACAACGA CCCGTTT	13621
9405	ACGGGAUG G CCUAUUGG	4873	CCAATAGG GGCTAGCTACAACGA CATCCCGT	13622
9401	GAUGGCCU A UUGGCCUG	4874	CAGGCCAA GGCTAGCTACAACGA AGGCCATC	13623
9397	GCCUAUUG G CCUGGAGU	4875	ACTCCAGG GGCTAGCTACAACGA CAATAGGC	13624
9390	GGCCUGGA G UGUUUAGC	4876	GCTAAACA GGCTAGCTACAACGA TCCAGGCC	13625
9388	CCUGGAGU G UUUAGCUC	4877	GAGCTAAA GGCTAGCTACAACGA ACTCCAGG	13626
9383	AGUGUUUA G CUCCUGU	4878	ACAGGGAG GGCTAGCTACAACGA TAAACACT	13627
9376	AGCUCCCU G UUCAUCGG	4879	CCGATGAA GGCTAGCTACAACGA AGGGAGCT	13628
9372	CCCUGUUC A UCGGUUGG	4880	CCAACCGA GGCTAGCTACAACGA GAACAGGG	13629
9368	GUUCAUCG G UUGGGGAG	4881	CTCCCCAA GGCTAGCTACAACGA CGATGAAC	13630
9360	GUUGGGGA G CAGGUAGA	4882	TCTACCTG GGCTAGCTACAACGA TCCCCAAC	13631
9356	GGGAGCAG G UAGAUGCC	4883	GGCATCTA GGCTAGCTACAACGA CTGCTCCC	13632
9352	GCAGGUAG A UGCCUACC	4884	GGTAGGCA GGCTAGCTACAACGA CTACCTGC	13633
9350	AGGUAGAU G CCUACCCC	4885	GGGGTAGG GGCTAGCTACAACGA ATCTACCT	13634
9346	AGAUGCCU A CCCCUACG	4886	CGTAGGGG GGCTAGCTACAACGA AGGCATCT	13635
9340	CUACCCCU A CGGAGAGU	4887	ACTCTCCG GGCTAGCTACAACGA AGGGGTAG	13636
9333	UACGGAGA G UAGGAGUA	4888	TACTCCTA GGCTAGCTACAACGA TCTCCGTA	13637
9327	GAGUAGGA G UAGGCAA	4889	TTTGCTTA GGCTAGCTACAACGA TCCTACTC	13638
9323	AGGAGUAG G CAAAGCAU	4890	ATGCTTTG GGCTAGCTACAACGA CTACTCCT	13639
9318	UAGGCAA G CAUGAACC	4891	GGTTCATG GGCTAGCTACAACGA TTTGCTTA	13640
9316	GGCAAAGC A UGAACCAG	4892	CTGGTTCA GGCTAGCTACAACGA GCTTTGCC	13641
9312	AAGCAUGA A CCAGCGGG	4893	CCCCTGCG GGCTAGCTACAACGA TCATGCTT	13642
9308	AUGAACCA G CGGGGUCG	4894	CGACCCCG GGCTAGCTACAACGA TGGTTCAT	13643
9303	CCAGCGGG G UCGGGCAC	4895	GTGCCCCG GGCTAGCTACAACGA CCCGCTGG	13644
9298	GGGUGCGG G CACGAGAC	4896	GTCTCGTG GGCTAGCTACAACGA CCGACCCC	13645
9296	GGUCGGGC A CGAGACAG	4897	CTGTCTCG GGCTAGCTACAACGA GCCCGACC	13646
9291	GGCAGCAG A CAGGCUGU	4898	ACAGCCTG GGCTAGCTACAACGA CTCGTGCC	13647
9287	CGAGACAG G CUGUGAU	4899	TATCACAG GGCTAGCTACAACGA GCTTTGCT	13648
9284	GACAGGCU G UGAUACAC	4900	GTGTATCA GGCTAGCTACAACGA AGCCTGTC	13649
9281	AGGCUGUG A UACACGUC	4901	GACGTGTA GGCTAGCTACAACGA CACAGCCT	13650
9279	GCUGUGAU A CACGUCUC	4902	GAGACGTG GGCTAGCTACAACGA ATCACAGC	13651
9277	UGUGAUAC A CGUCUCCC	4903	GGGAGACG GGCTAGCTACAACGA GTATCACA	13652
9275	UGAUACAC G UCUCUCCC	4904	GGGGGAGA GGCTAGCTACAACGA GTGTATCA	13653
9266	UCUCUCCC G CUGUAGCC	4905	GGCTACAG GGCTAGCTACAACGA GGGGGAGA	13654
9263	CCCCGCGU G UAGCCAGC	4906	GCTGGCTA GGCTAGCTACAACGA AGCGGGGG	13655
9260	CCGUGUA G CCAGCAAC	4907	GTTGCTGG GGCTAGCTACAACGA TACAGCGG	13656
9256	UGUAGCCA G CAACGAAC	4908	GTTGCTGG GGCTAGCTACAACGA TGGCTACA	13657
9253	AGCCAGCA A CGAACCAG	4909	CTGGTTCT GGCTAGCTACAACGA TGCTGGCT	13658
9249	AGCAACGA A CCAGUUGG	4910	CCAACCTG GGCTAGCTACAACGA TCGTTGCT	13659
9245	ACGAACCA G UUGGACAA	4911	TTGTCCAA GGCTAGCTACAACGA TGGTTCGT	13660
9240	CCAGUUGG A CAAGUCCA	4912	TGGACTTG GGCTAGCTACAACGA CCAACTGG	13661
9236	UUGGACAA G UCCAACUG	4913	CAGTTGGA GGCTAGCTACAACGA TTGTCCAA	13662
9231	CAAGUCCA A CUGAGACG	4914	CGTCTCAG GGCTAGCTACAACGA TGGACTTG	13663
9225	CAACUGAG A CGCAGCUG	4915	CAGCTCGG GGCTAGCTACAACGA CTCAGTTG	13664
9223	ACUGAGAC G CAGCUGGG	4916	CCCAGCTG GGCTAGCTACAACGA GTCTCAGT	13665
9220	GAGACGCA G CUGGGAUU	4917	AATCCCAG GGCTAGCTACAACGA TCGTCTC	13666
9214	CAGCUGGG A UUGGAGUG	4918	CACTCCAA GGCTAGCTACAACGA CCCAGCTG	13667
9208	GGAUUGGA G UGAGUUUG	4919	CAAACCTA GGCTAGCTACAACGA TCCAATCC	13668
9204	UGGAGUGA G UUUGAGUU	4920	AACTCAA GGCTAGCTACAACGA TCACTCCA	13669
9198	GAGUUUGA G UUUGGUCU	4921	AGACCAA GGCTAGCTACAACGA TCAAACCTC	13670

9193	UGAGUUUG G UCUUUACU	4922	AGTAAAGA GGCTAGCTACAACGA CAAACTCA	13671
9187	UGGUCUUU A CUGCCCAG	4923	CTGGGCAG GGCTAGCTACAACGA AAAGACCA	13672
9184	UCUUUACU G CCCAGUUG	4924	CAACTGGG GGCTAGCTACAACGA AGTAAAGA	13673
9179	ACUGCCCA G UUGAAGAG	4925	CTCTTCAA GGCTAGCTACAACGA TGGGCAGT	13674
9170	UUGAAGAG G UACCUGCC	4926	GGCAGGTA GGCTAGCTACAACGA CTCTCAA	13675
9168	GAAGAGGU A CCUGCCAC	4927	GTGGCAGG GGCTAGCTACAACGA ACCTCTTC	13676
9164	AGGUACCU G CCACAGGU	4928	ACCTGTGG GGCTAGCTACAACGA AGGTACCT	13677
9161	UACCUGCC A CAGGUGGC	4929	GCCACCTG GGCTAGCTACAACGA GGCAGGTA	13678
9157	UGCCACAG G UGGCGGCC	4930	GGCCGCCA GGCTAGCTACAACGA CTGTGGCA	13679
9154	CACAGGUG G CGGCCUC	4931	GAGGGCCG GGCTAGCTACAACGA CACCTGTG	13680
9151	AGGUGGCG G CCCUCCCC	4932	GGGGAGGG GGCTAGCTACAACGA CGCCACCT	13681
9135	CCCCUGG A CAGUAGCU	4933	AGCTACTG GGCTAGCTACAACGA TCCAGGGG	13682
9132	CUGGGACA G UAGCUUAG	4934	CTAAGCTA GGCTAGCTACAACGA TGTCCAG	13683
9129	GGACAGUA G CUUAGCGC	4935	GCGCTAAG GGCTAGCTACAACGA TACTGTCC	13684
9124	GUAGCUUA G CGCGAACA	4936	TGTTGCGG GGCTAGCTACAACGA TAAGCTAC	13685
9122	AGCUUAGC G CGAACACU	4937	AGTGTTCG GGCTAGCTACAACGA GCTAAGCT	13686
9118	UAGCGCGA A CACUUCUG	4938	CAGAAGTG GGCTAGCTACAACGA TCGCGCTA	13687
9116	GCGCGAAC A CUUCUGGC	4939	GCCAGAAG GGCTAGCTACAACGA GTTCGCGC	13688
9109	CACUUCUG G CCCGAUGU	4940	ACATCGGG GGCTAGCTACAACGA CAGAAGTG	13689
9104	CUGGCCCG A UGUCUCCA	4941	TGGAGACA GGCTAGCTACAACGA CGGGCCAG	13690
9102	GGCCCGAU G UCUCAGG	4942	CCTGGAGA GGCTAGCTACAACGA ATCGGGCC	13691
9094	GUCUCCAG G UUCGCAAG	4943	CTTGCGAA GGCTAGCTACAACGA CTGGAGAC	13692
9090	CCAGGUUC G CAAGGGUG	4944	CACCCTTG GGCTAGCTACAACGA GAACCTGG	13693
9084	UCGCAAGG G UGGUACCC	4945	GGGTACCA GGCTAGCTACAACGA CCTTGCGA	13694
9081	CAAGGGUG G UACCCCAA	4946	TTGGGGTA GGCTAGCTACAACGA CACCCTTG	13695
9079	AGGGUGGU A CCCCAAGU	4947	ACTTGGGG GGCTAGCTACAACGA ACCACCTT	13696
9072	UACCCCAA G UUUCUGA	4948	TCAGGAAA GGCTAGCTACAACGA TTGGGGTA	13697
9062	UUCCUGAG G CAUGAUGC	4949	GCATCATG GGCTAGCTACAACGA CTCAGGAA	13698
9060	CCUGAGGC A UGAUGCCA	4950	TGGCATCA GGCTAGCTACAACGA GCCTCAGG	13699
9057	GAGGCAUG A UGCCACCC	4951	GGGTGGCA GGCTAGCTACAACGA CATGCCTC	13700
9055	GGCAUGAU G CCACCCUA	4952	TAGGGTGG GGCTAGCTACAACGA ATCATGCC	13701
9052	AUGAUGCC A CCCUAUUG	4953	CAATAGGG GGCTAGCTACAACGA GGCATCAT	13702
9047	GCCACCCU A UUGAUUUC	4954	GAAATCAA GGCTAGCTACAACGA AGGGTGGC	13703
9043	CCCUAUUG A UUUCACCU	4955	AGGTGAAA GGCTAGCTACAACGA CAATAGGG	13704
9038	UUGAUUUC A CCUGGGGA	4956	TCCCCAGG GGCTAGCTACAACGA GAAATCAA	13705
9029	CCUGGGGA G UAACUAUG	4957	CATAGTTA GGCTAGCTACAACGA TCCCCAGG	13706
9026	GGGGAGUA A CUAUGGAG	4958	CTCCATGA GGCTAGCTACAACGA TACTCCCC	13707
9023	GAGUAACU A UGGAGUGA	4959	TCATCCCA GGCTAGCTACAACGA AGTTACTC	13708
9018	ACUAUGGA G UGAAAUG	4960	CATTTTCA GGCTAGCTACAACGA TCCATAGT	13709
9012	GAGUGAAA A UGCGCUAA	4961	TTAGCGCA GGCTAGCTACAACGA TTCTACTC	13710
9010	GUGAAAAU G CGCUAAGA	4962	TCTTAGCG GGCTAGCTACAACGA ATTTTCAC	13711
9008	GAAAAUGC G CUAAGACC	4963	GGTCTTAG GGCTAGCTACAACGA GCATTTTC	13712
9002	GCGCUAAG A CCAUGGAG	4964	CTCCATGG GGCTAGCTACAACGA CTTAGCGC	13713
8999	CUAAGACC A UGGAGUCG	4965	CGACTCCA GGCTAGCTACAACGA GGTCTTAG	13714
8994	ACCAUGGA G UCGUGAA	4966	TTCAGCGA GGCTAGCTACAACGA TCCATGGT	13715
8991	AUGGAGUC G CUGAAUGA	4967	TCATTGAG GGCTAGCTACAACGA GACTCCAT	13716
8986	GUCGCUGA A UGAUCUGA	4968	TCAGATCA GGCTAGCTACAACGA TCAGCGAC	13717
8983	GCUGAAUG A UCUGAGGU	4969	ACCTCAGA GGCTAGCTACAACGA CATTGAGC	13718
8976	GAUCUGAG G UAGGUCAA	4970	TTGACCTA GGCTAGCTACAACGA CTCAGATC	13719
8972	UGAGGUAG G UCAAGUGG	4971	CCACTTGA GGCTAGCTACAACGA CTACCTCA	13720
8967	UAGGUCAA G UGGCUCAA	4972	TTGAGCCA GGCTAGCTACAACGA TTGACCTA	13721
8964	GUCAAGUG G CUCAAUGG	4973	CCATTGAG GGCTAGCTACAACGA CACTTGAC	13722
8959	GUGGCUCA A UGGAGUAA	4974	TTACTCCA GGCTAGCTACAACGA TGAGCCAC	13723
8954	UCAAUGGA G UAACAAGC	4975	GCTTGTTA GGCTAGCTACAACGA TCCATTGA	13724
8951	AUGGAGUA A CAAGCCCC	4976	GGGGCTTG GGCTAGCTACAACGA TACTCCAT	13725
8947	AGUAACAA G CCCCUGAG	4977	CTACGGGG GGCTAGCTACAACGA TTGTTACT	13726



8942	CAAGCCCC G UAGAUCUG	4978	CAGATCTA GGCTAGCTACAACGA GGGGCTTG	13727
8938	CCCCGUAG A UCUGGCAG	4979	CTGCCAGA GGCTAGCTACAACGA CTACGGGG	13728
8933	UAGAUCUG G CAGUCUAG	4980	CTAGACTG GGCTAGCTACAACGA CAGATCTA	13729
8930	AUCUGGCA G UCUAGGGC	4981	GCCCTAGA GGCTAGCTACAACGA TGCCAGAT	13730
8923	AGUCUAGG G CUUUCUCA	4982	TGAGAAAG GGCTAGCTACAACGA CCTAGACT	13731
8913	UUUCUCAA G UUGCUCU	4983	AGGAGCAA GGCTAGCTACAACGA TTGAGAAA	13732
8910	CUCAAGUU G CUCCUGGG	4984	CCCAGGAG GGCTAGCTACAACGA AACTTGAG	13733
8902	GCUCCUGG G CUAGAAGG	4985	CCTTCTAG GGCTAGCTACAACGA CCAGGAGC	13734
8893	CUAGAAGG A UGGAGAAG	4986	CTTCTCCA GGCTAGCTACAACGA CCTTCTAG	13735
8882	GAGAAGAA G UGAGUCAU	4987	ATGACTGA GGCTAGCTACAACGA TTCTTCTC	13736
8878	AGAAGUGA G UCAUCAGA	4988	TCTGATGA GGCTAGCTACAACGA TCACCTCT	13737
8875	AGUGAGUC A UCAGAAUC	4989	GATTCTGA GGCTAGCTACAACGA GACTCACT	13738
8869	UCAUCAGA A UCAUCCUU	4990	AAGGATGA GGCTAGCTACAACGA TCTGATGA	13739
8866	UCAGAAUC A UCCUUACC	4991	GGTAAGGA GGCTAGCTACAACGA GATTCTGA	13740
8860	UCAUCCUU A CCCAUAGA	4992	TCTATGGG GGCTAGCTACAACGA AAGGATGA	13741
8856	CCUUACCC A UAGAGUGG	4993	CCACTCTA GGCTAGCTACAACGA GGGTAAGG	13742
8851	CCCAUAGA G UGGGUGCA	4994	TGCACCCA GGCTAGCTACAACGA TCTATGGG	13743
8847	UAGAGUGG G UGCAAACA	4995	TGTTTGCA GGCTAGCTACAACGA CCACTCTA	13744
8845	GAGUGGGU G CAAACAUG	4996	CATGTTTG GGCTAGCTACAACGA ACCCACTC	13745
8841	GGGUGCAA A CAUGAUGA	4997	TCATCATG GGCTAGCTACAACGA TTGCACCC	13746
8839	GUGCAAAC A UGAUGAUG	4998	CATCATCA GGCTAGCTACAACGA GTTTCAC	13747
8836	CAAACAUG A UGAUGUUG	4999	CAACATCA GGCTAGCTACAACGA CATGTTTG	13748
8833	ACAUGAUG A UGUUGCCU	5000	AGGCAACA GGCTAGCTACAACGA CATCATGT	13749
8831	AUGAUGAU G UUGCCUAG	5001	CTAGGCAA GGCTAGCTACAACGA ATCATCAT	13750
8828	AUGAUGUU G CCUAGCCA	5002	TGGCTAGG GGCTAGCTACAACGA AACATCAT	13751
8823	GUUGCCUA G CCAGGAGU	5003	ACTCCTGG GGCTAGCTACAACGA TAGGCAAC	13752
8816	AGCCAGGA G UUGACUGG	5004	CCAGTCAA GGCTAGCTACAACGA TCCTGGCT	13753
8812	AGGAGUUG A CUGGAGUG	5005	CACCTCAG GGCTAGCTACAACGA CAACTCCT	13754
8806	UGACUGGA G UGCUUCUA	5006	TAGAAGCA GGCTAGCTACAACGA TCCAGTCA	13755
8804	ACUGGAGU G CUUCUAGC	5007	GCTAGAAG GGCTAGCTACAACGA ACTCCAGT	13756
8797	UGCUUCUA G CUGUCUCC	5008	GGAGACAG GGCTAGCTACAACGA TAGAAGCA	13757
8794	UUCUAGCU G UCUCCCAC	5009	GTGGGAGA GGCTAGCTACAACGA AGCTAGAA	13758
8787	UGUCUCCC A CGCAGCCC	5010	GGGCTGCG GGCTAGCTACAACGA GGGAGACA	13759
8785	UCUCCACG G CAGCCCGC	5011	GCGGGCTG GGCTAGCTACAACGA GTGGGAGA	13760
8782	CCCACGCA G CCCGCGCA	5012	TGCGCGGG GGCTAGCTACAACGA TGCGTGGG	13761
8778	CGCAGCCC G CGCAAGGG	5013	CCCTTGCG GGCTAGCTACAACGA GGGCTGCG	13762
8776	CAGCCCGC G CAAGGGGG	5014	CCCCCTTG GGCTAGCTACAACGA GCGGGCTG	13763
8767	CAAGGGGG G UGGUGGGG	5015	CCCCACCA GGCTAGCTACAACGA CCCCCTTG	13764
8764	GGGGGGUG G UGGGGUCA	5016	TGACCCCA GGCTAGCTACAACGA CACCCCCC	13765
8759	GUGGUGGG G UCACGGGU	5017	ACCCGTGA GGCTAGCTACAACGA CCCACCAC	13766
8756	GUGGGGUC A CGGGUGAG	5018	CTCACCCG GGCTAGCTACAACGA GACCCAC	13767
8752	GGUCACGG G UGAGGUAG	5019	CTACCTCA GGCTAGCTACAACGA CCGTGACC	13768
8747	CGGGUGAG G UAGUACAC	5020	GTGTACTA GGCTAGCTACAACGA CTCACCCG	13769
8744	GUGAGGUA G UACACCCU	5021	AGGGGTGA GGCTAGCTACAACGA TACCTCAC	13770
8742	GAGGUAGU A CACCCUUU	5022	AAAGGGTG GGCTAGCTACAACGA ACTACCTC	13771
8740	GGUAGUAC A CCCUUUUG	5023	CAAAAGGG GGCTAGCTACAACGA GTACTACC	13772
8732	ACCCUUUU G CCAGAUGC	5024	GCATCTGG GGCTAGCTACAACGA AAAAGGGT	13773
8727	UUUGCCAG A UGCAUCGU	5025	ACGATGCA GGCTAGCTACAACGA CTGGCAAA	13774
8725	UGCCAGAU G CAUCGUGU	5026	ACACGATG GGCTAGCTACAACGA ATCTGGCA	13775
8723	CCAGAUGC A UCGUGUGC	5027	GCACACGA GGCTAGCTACAACGA GCATCTGG	13776
8720	GAUGCAUC G UGUGCAAC	5028	GTTGCACA GGCTAGCTACAACGA GATGCATC	13777
8718	UGCAUCGU G UGCAACUG	5029	CAGTTGCA GGCTAGCTACAACGA ACGATGCA	13778
8716	CAUCGUGU G CAACUGAU	5030	ATCAGTTG GGCTAGCTACAACGA ACACGATG	13779
8713	CGUGUGCA A CUGAUACG	5031	CGTATCAG GGCTAGCTACAACGA TGCACACG	13780
8709	UGCAACUG A UACGUUGG	5032	CCAACGTA GGCTAGCTACAACGA CAGTTGCA	13781
8707	CAACUGAU A CGUUGGAG	5033	CTCCAACG GGCTAGCTACAACGA ATCAGTTG	13782



8705	ACUGAUAC G UUGGAGGA	5034	TCCTCCAA GGCTAGCTACAACGA GTATCAGT	13783
8696	UUGGAGGA G CAUGAUGU	5035	ACATCATG GGCTAGCTACAACGA TCCTCCAA	13784
8694	GGAGGAGC A UGAUGUUA	5036	TAACATCA GGCTAGCTACAACGA GCTCCTCC	13785
8691	GGAGCAUG A UGUUAUCA	5037	TGATAACA GGCTAGCTACAACGA CATGCTCC	13786
8689	AGCAUGAU G UUAUCAAC	5038	GTTGATAA GGCTAGCTACAACGA ATCATGCT	13787
8686	AUGAUGUU A UCAACUCC	5039	GGAGTTGA GGCTAGCTACAACGA AACATCAT	13788
8682	UGUUAUCA A CUCCAAGU	5040	ACTTGGAG GGCTAGCTACAACGA TGATAACA	13789
8675	AACUCCAA G UCGUAUUC	5041	GAATACGA GGCTAGCTACAACGA TTGGAGTT	13790
8672	UCCAAGUC G UAUUCCGG	5042	CCGGAATA GGCTAGCTACAACGA GACTTGGA	13791
8670	CAAGUCGU A UUCCGGUU	5043	AACCGGAA GGCTAGCTACAACGA ACGACTTG	13792
8664	GUAUUCCG G UUGGGGCG	5044	CGCCCCAA GGCTAGCTACAACGA CGGAATAC	13793
8658	CGGUUGGG G CGGGUCCC	5045	GGGACCCG GGCTAGCTACAACGA CCCAACCG	13794
8654	UGGGGCGG G UCCCCGGG	5046	CCCGGGGA GGCTAGCTACAACGA CCGCCCCA	13795
8641	CGGGGGGG G CAGAGUAC	5047	GTACTCTG GGCTAGCTACAACGA CCCCCCGG	13796
8636	GGGGCAGA G UACCUAGU	5048	ACTAGGTA GGCTAGCTACAACGA TCTGCCCC	13797
8634	GGCAGAGU A CCUAGUCA	5049	TGACTAGG GGCTAGCTACAACGA ACTCTGCC	13798
8629	AGUACCUA G UCAUAGCC	5050	GGCTATGA GGCTAGCTACAACGA TAGGTACT	13799
8626	ACCUAGUC A UAGCCUCC	5051	GGAGGCTA GGCTAGCTACAACGA GACTAGGT	13800
8623	UAGUCAUA G CCUCCGUG	5052	CACGGAGG GGCTAGCTACAACGA TATGACTA	13801
8617	UAGCCUCC G UGAAGACU	5053	AGTCTTCA GGCTAGCTACAACGA GGAGGCTA	13802
8611	CCGUGAAG A CUCGUAGG	5054	CCTACGAG GGCTAGCTACAACGA CTTCACGG	13803
8607	GAAGACUC G UAGGCUCG	5055	CGAGCCTA GGCTAGCTACAACGA GAGTCTTC	13804
8603	ACUCGUAG G CUCGCCGC	5056	GCGGCGAG GGCTAGCTACAACGA CTACGAGT	13805
8599	GUAGGCUC G CCGCGUCC	5057	GGACGCGG GGCTAGCTACAACGA GAGCCTAC	13806
8596	GGCUCGCC G CGUCCUCU	5058	AGAGGACG GGCTAGCTACAACGA GCGGAGCC	13807
8594	CUCGCCGC G UCCUCUUG	5059	CAAGAGGA GGCTAGCTACAACGA GCGGCGAG	13808
8584	CCUCUUGG G UCCCCGCA	5060	TGCGGGGA GGCTAGCTACAACGA CCAAGAGG	13809
8578	GGGUCCCC G CACUUUCA	5061	TGAAAGTG GGCTAGCTACAACGA GGGGACCC	13810
8576	GUCCCCGC A CUUUCACA	5062	TGTGAAAG GGCTAGCTACAACGA GCGGGGAC	13811
8570	GCACUUUC A CAGUAUAC	5063	GTTATCTG GGCTAGCTACAACGA GAAAGTGC	13812
8566	UUUCACAG A UAACGACC	5064	GGTCGTTA GGCTAGCTACAACGA CTGTGAAA	13813
8563	CACAGUAU A CGACCAGG	5065	CCTGGTCG GGCTAGCTACAACGA TATCTGTG	13814
8560	AGAUAAAG A CCAGGUCC	5066	CGACCTGG GGCTAGCTACAACGA CGTTATCT	13815
8555	ACGACCAG G UCGUCUCC	5067	GGAGACGA GGCTAGCTACAACGA CTGGTCGT	13816
8552	ACCAGGUC G UCUCACCA	5068	TGTGGAGA GGCTAGCTACAACGA GACCTGGT	13817
8546	UCGUCUCC A CACACGAG	5069	CTCGTGTG GGCTAGCTACAACGA GGAGACGA	13818
8544	GUCUCCAC A CACGAGCA	5070	TGCTCGTG GGCTAGCTACAACGA GTGGAGAC	13819
8542	CUCCACAC A CGAGCAUC	5071	GATGCTCG GGCTAGCTACAACGA CTGTGGAG	13820
8538	ACACACGA G CAUCGUGC	5072	GCACGATG GGCTAGCTACAACGA TCGTGTGT	13821
8536	ACACGAGC A UCGUGCAG	5073	CTGCACGA GGCTAGCTACAACGA GTCGTGT	13822
8533	CGAGCAUC G UGCAGUCC	5074	GGACTGCA GGCTAGCTACAACGA GATGCTCG	13823
8531	AGCAUCGU G CAGUCCUG	5075	CAGGACTG GGCTAGCTACAACGA ACGATGCT	13824
8528	AUCGUGCA G UCCUGGAG	5076	CTCCAGGA GGCTAGCTACAACGA TGCACGAT	13825
8520	GUCCUGGA G CUUCGCAG	5077	CTGCGAAG GGCTAGCTACAACGA TCCAGGAC	13826
8515	GGAGCUUC G CAGCUCGA	5078	TCGAGCTG GGCTAGCTACAACGA GAAGCTCC	13827
8512	GCUUCGCA G CUCGACAG	5079	CTGTCGAG GGCTAGCTACAACGA TGCGAAGC	13828
8507	GCAGCUCG A CAGGCCGC	5080	GCGGCCCT GGCTAGCTACAACGA CGAGCTGC	13829
8503	CUCGACAG G CCGCAGAG	5081	CTCTGCGG GGCTAGCTACAACGA CTGTGCGG	13830
8500	GACAGGCC G CAGAGGCU	5082	AGCCTCTG GGCTAGCTACAACGA GGCCTGTC	13831
8494	CCGACAGG G CUUUCAAG	5083	CTTGAAAG GGCTAGCTACAACGA CTCTGCGG	13832
8486	GCUUUCAA G UAACAUGU	5084	ACATGTTA GGCTAGCTACAACGA TTGAAAGC	13833
8483	UUCAAGUA A CAUGUGAG	5085	CTCACATG GGCTAGCTACAACGA TACTTGAA	13834
8481	CAAGUAAC A UGUGAGGG	5086	CCCTCACA GGCTAGCTACAACGA GTTACTTG	13835
8479	AGUAACAU G UGAGGGUA	5087	TACCCTCA GGCTAGCTACAACGA ATGTTACT	13836
8473	AUGAGAGG G UAUUACCA	5088	TGGTAATA GGCTAGCTACAACGA CCTCACAT	13837
8471	GUGAGGGU A UUACCACA	5089	TGTGGTAA GGCTAGCTACAACGA ACCCTCAC	13838

8468	AGGGUAAU A CCACAGCU	5090	AGCTGTGG GGCTAGCTACAACGA AATACCCT	13839
8465	GUUUUACC A CAGCUGGU	5091	ACCAGCTG GGCTAGCTACAACGA GGTAATAC	13840
8462	UUACCACA G CUGGUCGU	5092	ACGACCAG GGCTAGCTACAACGA TGTGGTAA	13841
8458	CACAGCUG G UCGUCAGC	5093	GCTGACGA GGCTAGCTACAACGA CAGCTGTG	13842
8455	AGCUGGUC G UCAGCACG	5094	CGTGCTGA GGCTAGCTACAACGA GACCAGCT	13843
8451	GGUCGUCA G CACGCCGC	5095	GCGGCGTG GGCTAGCTACAACGA TGACGACC	13844
8449	UCGUCAGC A CGCCGCUC	5096	GAGCGGCG GGCTAGCTACAACGA GCTGACGA	13845
8447	GUCAGCAC G CCGCUCGC	5097	GCGAGCGG GGCTAGCTACAACGA GTGCTGAC	13846
8444	AGCACGCC G CUCGCGCG	5098	CGCGCGAG GGCTAGCTACAACGA GGCGTGCT	13847
8440	CGCCGCUC G CGGCACC	5099	GTGCCGCG GGCTAGCTACAACGA GAGCGGCG	13848
8438	CCGCGCGC G CGGCACCG	5100	CGGTGCCG GGCTAGCTACAACGA GCGAGCGG	13849
8435	CUCGCGCG G CACCGGCG	5101	CGCCGGTG GGCTAGCTACAACGA CGCGCGAG	13850
8433	CGCGCGGC A CCGGCGAU	5102	ATCGCCGG GGCTAGCTACAACGA GCCGCGCG	13851
8429	CGGCACCG G CGAUAAAC	5103	GGTTATCG GGCTAGCTACAACGA CCGTGCCG	13852
8426	CACCGGCG A UAACCGCA	5104	TGCGGTTA GGCTAGCTACAACGA CGCCGGTG	13853
8423	CGGCGAUA A CCGCAGUU	5105	AACTGCGG GGCTAGCTACAACGA TATCGCCG	13854
8420	CGAUAAAC G CAGUUCUG	5106	CAGAACTG GGCTAGCTACAACGA GGTTATCG	13855
8417	UAACCGCA G UUCUGCCC	5107	GGGCAGAA GGCTAGCTACAACGA TGCGGTTA	13856
8412	GCAGUUCU G CCCUUUUG	5108	CAAAAGGG GGCTAGCTACAACGA AGAAGTGC	13857
8402	CCUUUUGA A UUAGUCAG	5109	CTGACTAA GGCTAGCTACAACGA TCAAAAGG	13858
8398	UUGAAUUA G UCAGAGGA	5110	TCCTCTGA GGCTAGCTACAACGA TAATTCAA	13859
8390	GUCAGAGG A CCCCCGAU	5111	ATCGGGGG GGCTAGCTACAACGA CCTCTGAC	13860
8383	GACCCCCG A UAUAAAGC	5112	GCTTTATA GGCTAGCTACAACGA CGGGGGTC	13861
8381	CCCCCGAU A UAAAGCCG	5113	CGGCTTTA GGCTAGCTACAACGA ATCGGGGG	13862
8376	GAUUAUAA G CCGCUCUG	5114	CAGAGCGG GGCTAGCTACAACGA TTTATATC	13863
8373	AUAAAGCC G CUCUGUGA	5115	TCACAGAG GGCTAGCTACAACGA GGCTTTAT	13864
8368	GCCGUCUC G UGAGCGAC	5116	GTGCTCA GGCTAGCTACAACGA AGAGCGGC	13865
8364	CUCUGUGA G CGACCUUA	5117	TAAGGTCG GGCTAGCTACAACGA TCACAGAG	13866
8361	UGUGAGCG A CCUUAUGG	5118	CCATAAGG GGCTAGCTACAACGA CGCTCACA	13867
8356	GCGACCUU A UGGCCUGU	5119	ACAGGCCA GGCTAGCTACAACGA AAGGTCGC	13868
8353	ACCUUAUG G CCUGUCUG	5120	CAGACAGG GGCTAGCTACAACGA CATAAGGT	13869
8349	UAUGCCCU G UCUGGCUU	5121	AAGCCAGA GGCTAGCTACAACGA AGGCCATA	13870
8344	CCUGUCUG G CUUCGGGG	5122	CCCCGAAG GGCTAGCTACAACGA CAGACAGG	13871
8335	CUUCGGGG G CCAAGUCA	5123	TGACTTGG GGCTAGCTACAACGA CCCCAGAG	13872
8330	GGGGCCAA G UCACAACA	5124	TGTTGTGA GGCTAGCTACAACGA TTGGCCCC	13873
8327	GCCAAGUC A CAACAUGG	5125	CAATGTTG GGCTAGCTACAACGA CGTTGGC	13874
8324	AAGUCACA A CAUUGGUA	5126	TACCAATG GGCTAGCTACAACGA TGTGACTT	13875
8322	GUCACAAC A UUGGUAAA	5127	TTTACCAA GGCTAGCTACAACGA GTTGTGAC	13876
8318	CAACAUUG G UAAUUGA	5128	TCAATTTA GGCTAGCTACAACGA CAATGTTG	13877
8314	AUUGGUAA A UUGACUCC	5129	GGAGTCAA GGCTAGCTACAACGA TTACCAAT	13878
8310	GUAAAUUG A CUCCUCGA	5130	TCGAGGAG GGCTAGCTACAACGA CAATTTAC	13879
8302	ACUCCUCG A CACGGAUG	5131	CATCCGTG GGCTAGCTACAACGA CGAGGAGT	13880
8300	UCCUCGAC A CGGAUGUC	5132	GACATCCG GGCTAGCTACAACGA GTCGAGGA	13881
8296	CGACACGG A UGUACUC	5133	GAGTGACA GGCTAGCTACAACGA CCGTGTG	13882
8294	ACACGGAU G UCACUCUC	5134	GAGAGTGA GGCTAGCTACAACGA ATCCGTGT	13883
8291	CGGAUGUC A CUCUCGGU	5135	ACCGAGAG GGCTAGCTACAACGA GACATCCG	13884
8284	CACUCUCG G UGACUGUU	5136	AACAGTCA GGCTAGCTACAACGA CGAGAGTG	13885
8281	UCUCGGUG A CUGUUGAG	5137	CTCAACAG GGCTAGCTACAACGA CACCGAGA	13886
8278	CGGUGACU G UUGAGUCG	5138	CGACTCAA GGCTAGCTACAACGA AGTCACCG	13887
8273	ACUGUUGA G UCGAAACA	5139	TGTTTCGA GGCTAGCTACAACGA TCAACAGT	13888
8267	GAGUCGAA A CAGCGGGU	5140	ACCCGCTG GGCTAGCTACAACGA TTCGACTC	13889
8264	UCGAAACA G CCGGUGUC	5141	GACACCCG GGCTAGCTACAACGA TGTTCGA	13890
8260	AACAGCGG G UGUCAUUA	5142	ATATGACA GGCTAGCTACAACGA CCGTGTT	13891
8258	CAGCGGGU G UCAUAUGC	5143	GCATATGA GGCTAGCTACAACGA ACCCGCTG	13892
8255	CGGGUGUC A UAUGCAA	5144	TTTGCTGA GGCTAGCTACAACGA GACACCCG	13893
8253	GGUGUCAU A UGCAAAGC	5145	GCTTTGCA GGCTAGCTACAACGA ATGACACC	13894

8251	UGUCAUUAU G CAAAGCCC	5146	GGGCTTTG GGCTAGCTACAACGA ATATGACA	13895
8246	UAUGCAAA G CCCAUAGG	5147	CCTATGGG GGCTAGCTACAACGA TTTGCATA	13896
8242	CAAAGCCC A UAGGGCAU	5148	ATGCCCTA GGCTAGCTACAACGA GGGCTTTG	13897
8237	CCCAUAGG G CAUUUCUU	5149	AAGAAATG GGCTAGCTACAACGA CCTATGGG	13898
8235	CAUAGGGC A UUUCUUUG	5150	CAAAGAAA GGCTAGCTACAACGA GCCCTATG	13899
8226	UUUCUUUG A UUUCAGG	5151	CCTGGAAA GGCTAGCTACAACGA CAAAGAAA	13900
8218	AUUUCCAG G CAUUCACC	5152	GGTGAATG GGCTAGCTACAACGA CTGGAAT	13901
8216	UUCAGGC A UUCACCAG	5153	CTGGTGAA GGCTAGCTACAACGA GCCTGGAA	13902
8212	AGGCAUUC A CCAGGAAC	5154	GTTCTTGG GGCTAGCTACAACGA GAATGCCT	13903
8205	CACCAGGA A CUCAACCC	5155	GGGTGAG GGCTAGCTACAACGA TCCTGGTG	13904
8200	GGAACUCA A CCCGUGC	5156	GCAGCGGG GGCTAGCTACAACGA TGAGTTCC	13905
8196	CUCAACCC G CUGCCCAG	5157	CTGGGCAG GGCTAGCTACAACGA GGGTTGAG	13906
8193	AACCCGCU G CCCAGGAG	5158	CTCTGGG GGCTAGCTACAACGA AGCGGGTT	13907
8183	CCAGGAGA G UACUGGAA	5159	TTCCAGTA GGCTAGCTACAACGA TCTCTGG	13908
8181	AGGAGAGU A CUGGAAUC	5160	GATTCCAG GGCTAGCTACAACGA ACTCTCCT	13909
8175	GUACUGGA A UCCGUUUG	5161	CATACGGA GGCTAGCTACAACGA TCCAGTAC	13910
8171	UGGAAUCC G UAUGAAGA	5162	TCTTCATA GGCTAGCTACAACGA GGATTCCA	13911
8169	GAAUCCGU A UGAAGAGC	5163	GCTCTTCA GGCTAGCTACAACGA ACGGATTC	13912
8162	UAUGAAGA G CCAUCAC	5164	GTGATGGG GGCTAGCTACAACGA TCTTCATA	13913
8158	AAGAGCCC A UCACGGCC	5165	GGCCGTGA GGCTAGCTACAACGA GGGCTCTT	13914
8155	AGCCCAUC A CGGCCUGA	5166	TCAGGCCG GGCTAGCTACAACGA GATGGGCT	13915
8152	CCAUCACG G CCUGAGGA	5167	TCCTCAGG GGCTAGCTACAACGA CGTGATGC	13916
8140	GAGGAAGG G UGGAGACC	5168	GGTCTCCA GGCTAGCTACAACGA CTTCTCTG	13917
8134	GGGUGGAG A CCACGUCG	5169	CGACGTGG GGCTAGCTACAACGA TCCACCC	13918
8131	UGGAGACC A CGUCGUA	5170	TTACGACG GGCTAGCTACAACGA GGTCTCCA	13919
8129	GAGACCAC G UCGUAAAG	5171	CTTTACGA GGCTAGCTACAACGA GTGGTCTC	13920
8126	ACCACGUC G UAAAGGGC	5172	GCCCTTTA GGCTAGCTACAACGA GACGTGGT	13921
8119	CGUAAAGG G CCAUUUUC	5173	GAAAATGG GGCTAGCTACAACGA CTTTACG	13922
8116	AAAGGGCC A UUUCUCG	5174	CGAGAAAA GGCTAGCTACAACGA GGCCCTTT	13923
8108	AUUUUCUC G CACACACG	5175	CGTGTGTG GGCTAGCTACAACGA GAGAAAAT	13924
8106	UUUCUCGC A CACACGAA	5176	TTCTGTGT GGCTAGCTACAACGA GCGAGAAA	13925
8104	UCUCGCAC A CACGAACC	5177	GGTCTGTG GGCTAGCTACAACGA GTGCGAGA	13926
8102	UCGCACAC A CGAACCCC	5178	GGGGTTTG GGCTAGCTACAACGA GTGTGCGA	13927
8098	ACACACGA A CCCCCAAG	5179	CTTGGGGG GGCTAGCTACAACGA TCGTGTGT	13928
8090	ACCCCCAA G UCUGGGAA	5180	TTCCCAGA GGCTAGCTACAACGA TTGGGGGT	13929
8082	GUCUGGGA A CACGAUAA	5181	TTATCGTG GGCTAGCTACAACGA TCCAGAC	13930
8080	CUGGGAAC A CGAUUAGG	5182	CCTTATCG GGCTAGCTACAACGA GTTCCAG	13931
8077	GGAACACG A UAAGGCGA	5183	TCGCCTTA GGCTAGCTACAACGA CGTGTTC	13932
8072	ACGAUAAG G CGAGCUGG	5184	CCAGCTCG GGCTAGCTACAACGA CTTATCGT	13933
8068	UAAGGCGA G CUGGCUUG	5185	CAAGCCAG GGCTAGCTACAACGA TCGCTTTA	13934
8064	GCGAGCUG G CUUGCGGC	5186	GCCGCAAG GGCTAGCTACAACGA CAGCTCGC	13935
8060	GCUGGCUU G CGGCCUCC	5187	GGAGGCCG GGCTAGCTACAACGA AAGCCAGC	13936
8057	GGCUUGCG G CCUCCUUU	5188	AAAGGAGG GGCTAGCTACAACGA CGCAAGCC	13937
8043	UUUCUCUG G UUGGACGC	5189	GCGTCCAA GGCTAGCTACAACGA CAGAGAAA	13938
8038	CUGGUUGG A CGCAGAAA	5190	TTTCTGCG GGCTAGCTACAACGA CCAACCAG	13939
8036	GGUUGGAC G CAGAAAAC	5191	GTTTCTTG GGCTAGCTACAACGA GTCCAACC	13940
8029	CGCAGAAA A CCUCAUUU	5192	AAATGAGG GGCTAGCTACAACGA TTTCTGCG	13941
8024	AAAACCUU A UUUUUUGC	5193	GCAAAAAA GGCTAGCTACAACGA GAGGTTTT	13942
8017	CAUUUUUU G CCAUGAUG	5194	CATCATGG GGCTAGCTACAACGA AAAAAATG	13943
8014	UUUUUGCC A UGAUGGUG	5195	CACCATCA GGCTAGCTACAACGA GGCAAAAA	13944
8011	UUGCCAUG A UGGUGGUA	5196	TACCACCA GGCTAGCTACAACGA CATGGCAA	13945
8008	CCAUGAUG G UGGUAUCA	5197	TGATACCA GGCTAGCTACAACGA CATCATGG	13946
8005	UGAUGGUG G UAUCAAUU	5198	AATTGATA GGCTAGCTACAACGA CACCATCA	13947
8003	AUGGUGGU A UCAAUUGG	5199	CCAATTGA GGCTAGCTACAACGA ACCACCAT	13948
7999	UGGUAUCA A UUGGUGUC	5200	GACACCAA GGCTAGCTACAACGA TGATACCA	13949
7995	AUCAAUUG G UGUCUCAG	5201	CTGAGACA GGCTAGCTACAACGA CAATTGAT	13950

7993	CAAUUGGU G UCUCAGUG	5202	CACTGAGA GGCTAGCTACAACGA ACCAATTG	13951
7987	GUGUCUCA G UGUCUUC	5203	GGAAGACA GGCTAGCTACAACGA TGAGACAC	13952
7985	GUCUCAGU G UCUUCCAG	5204	CTGGAAGA GGCTAGCTACAACGA ACTGAGAC	13953
7977	GUCUUCCA G CAAGUCCU	5205	AGGACTTG GGCTAGCTACAACGA TGGAAGAC	13954
7973	UCCAGCAA G UCCUCCA	5206	TGGAAGGA GGCTAGCTACAACGA TTGCTGGA	13955
7965	GUCCUUC A CACGAGC	5207	GCTCCGTG GGCTAGCTACAACGA GGAAGGAC	13956
7963	CCUCCAC A CGGAGCG	5208	CCGCTCCG GGCTAGCTACAACGA GTGGAAGG	13957
7958	CACACGGA G CGGAUGUG	5209	CACATCCG GGCTAGCTACAACGA TCCGTGTG	13958
7954	CGGAGCGG A UGUGGUUG	5210	CAACCACA GGCTAGCTACAACGA CCGCTCCG	13959
7952	GAGCGGAU G UGGUUGAC	5211	GTCAACCA GGCTAGCTACAACGA ATCCGCTC	13960
7949	CGGAUGUG G UUGACGGC	5212	GCCGTCAA GGCTAGCTACAACGA CACATCCG	13961
7945	UGUGGUUG A CGGCCCG	5213	CGGGGCGG GGCTAGCTACAACGA CAACCACA	13962
7942	GGUUGACG G CCCCUG	5214	CAGCGGGG GGCTAGCTACAACGA CGTCAACC	13963
7937	ACGGCCCC G CUGGAUAG	5215	CTATCCAG GGCTAGCTACAACGA GGGGCCGT	13964
7932	CCCGUGG A UAGGUUC	5216	GGAACCTA GGCTAGCTACAACGA CCAGCGGG	13965
7928	CUGGAUAG G UUCCGGAC	5217	GTCCGGAA GGCTAGCTACAACGA CTATCCAG	13966
7921	GGUCCGG A CGUCCUU	5218	AAAGGACG GGCTAGCTACAACGA CCGGAACC	13967
7919	UUCCGGAC G UCCUUGC	5219	GCAAAGGA GGCTAGCTACAACGA GTCCGGAA	13968
7912	CGUCCUU G CCCCATA	5220	TTATGGGG GGCTAGCTACAACGA AAAGGACG	13969
7907	UUUGCCCC A UAACCAA	5221	TTTGGTTA GGCTAGCTACAACGA GGGGCAAA	13970
7904	GCCCCAUA A CCAAUUU	5222	AAATTTGG GGCTAGCTACAACGA TATGGGGC	13971
7899	AUAACCAA A UUUGGACC	5223	GGTCCAAA GGCTAGCTACAACGA TTGGTTAT	13972
7893	AAAUUUGG A CCUGGCCG	5224	CGGCCAGG GGCTAGCTACAACGA CCAAATTT	13973
7888	UGGACCUG G CCGAUGU	5225	ACATTCCG GGCTAGCTACAACGA CAGGTCCA	13974
7883	CUGGCCGA A UGUGGGGG	5226	CCCCACA GGCTAGCTACAACGA TCGGCCAG	13975
7881	GGCCGAU G UGGGGGCG	5227	CGCCCCCA GGCTAGCTACAACGA ATTCGGCC	13976
7875	AUGUGGGG G CGUCAGUC	5228	GACTGACG GGCTAGCTACAACGA CCCCACAT	13977
7873	GUGGGGGC G UCAGUCUG	5229	CAGACTGA GGCTAGCTACAACGA GCCCCAC	13978
7869	GGGCGUCA G UCUGCAGG	5230	CCTGCTGA GGCTAGCTACAACGA TGACGCCC	13979
7865	GUCAGUCU G CAGGUUC	5231	GAAGCCTG GGCTAGCTACAACGA AGACTGAC	13980
7861	GUCUGCAG G CUUCCUCU	5232	AGAGGAAG GGCTAGCTACAACGA CTGCAGAC	13981
7852	CUUCCUCU A CGGAUAGA	5233	TCTATCCG GGCTAGCTACAACGA AGAGGAAG	13982
7848	CUCUACGG A UAGAAGUU	5234	AACTTCTA GGCTAGCTACAACGA CCGTAGAG	13983
7842	GAUAGAA G UUUAGCCU	5235	AGGTAAA GGCTAGCTACAACGA TTCTATCC	13984
7837	GAAGUUUA G CCUUAACU	5236	AGTTAAGG GGCTAGCTACAACGA TAACTTC	13985
7831	UAGCCUUA A CUGUGGAC	5237	GTCCACAG GGCTAGCTACAACGA TAAGGCTA	13986
7828	CCUUAACU G UGGACGCC	5238	GGCTCCCA GGCTAGCTACAACGA AGTTAAGG	13987
7824	AACUGUGG A CGCCUUCG	5239	CGAAGGCG GGCTAGCTACAACGA CCACAGTT	13988
7822	CUGUGGAC G CCUUCGCC	5240	GGCGAAGG GGCTAGCTACAACGA GTCCACAG	13989
7816	ACGCCUUC G CCUUCAUC	5241	GATGAAGG GGCTAGCTACAACGA GAAGGCGT	13990
7810	UCGCCUUC A UCUCUUG	5242	CAAGGAGA GGCTAGCTACAACGA GAAGGCGA	13991
7800	CUCCUUGA G CACGUCCC	5243	GGGACGTG GGCTAGCTACAACGA TCAAGGAG	13992
7798	CCUUGAGC A CGUCCCGG	5244	CCGGGACG GGCTAGCTACAACGA GCTCAAGG	13993
7796	UUGAGCAC G UCCCGUA	5245	TACCGGGA GGCTAGCTACAACGA GTGCTCAA	13994
7790	ACGUCCCG G UAGUGGUC	5246	GACCACTA GGCTAGCTACAACGA CGGGACGT	13995
7787	UCCCGGUA G UGGUCGUC	5247	GACGACCA GGCTAGCTACAACGA TACCGGGA	13996
7784	CGGUAGUG G UCGUCCAG	5248	CTGGACGA GGCTAGCTACAACGA CACTACCG	13997
7781	UAGUGGUC G UCCAGGAC	5249	GTCTGTGA GGCTAGCTACAACGA GACCACTA	13998
7774	CGUCCAGG A CUUGCAGU	5250	ACTGCAAG GGCTAGCTACAACGA CCTGGACG	13999
7770	CAGGACUU G CAGUCUGU	5251	ACAGACTG GGCTAGCTACAACGA AAGTCCTG	14000
7767	GACUUGCA G UCUGUCAA	5252	TTGACAGA GGCTAGCTACAACGA TGCAAGTC	14001
7763	UGCAGUCU G UCAAAGGU	5253	ACCTTTGA GGCTAGCTACAACGA AGACTGCA	14002
7756	UGUCAAG G UGACCUUC	5254	GAAGGTCA GGCTAGCTACAACGA CTTTGACA	14003
7753	CAAAGGUG A CCUUCUUC	5255	GAAGAAGG GGCTAGCTACAACGA CACCTTTG	14004
7743	CUUCUUCU G CCGCUGGC	5256	GCCAGCGG GGCTAGCTACAACGA AGAAGAAG	14005
7740	CUUCUGCC G CUGGCUUG	5257	CAAGCCAG GGCTAGCTACAACGA GGCAGAAG	14006

7736	UGCCGCGU G CUUGCGCU	5258	AGCGCAAG GGCTAGCTACAACGA CAGCGGCA	14007
7732	GCUGGCUU G CGCUGCGA	5259	TCGCAGCG GGCTAGCTACAACGA AAGCCAGC	14008
7730	UGGCUUGC G CUGCGAGA	5260	TCTCGCAG GGCTAGCTACAACGA GCAAGCCA	14009
7727	CUUGCGCU G CGAGAUGU	5261	ACATCTCG GGCTAGCTACAACGA AGCGCAAG	14010
7722	GCUGCGAG A UGUUGUAG	5262	CTACAACA GGCTAGCTACAACGA CTCGCAGC	14011
7720	UGCGAGAU G UUGUAGCG	5263	CGCTACAA GGCTAGCTACAACGA ATCTCGCA	14012
7717	GAGAUGUU G UAGCGUAG	5264	CTACGCTA GGCTAGCTACAACGA AACATCTC	14013
7714	AUGUUGUA G CGUAGACC	5265	GGTCTACG GGCTAGCTACAACGA TACAACAT	14014
7712	GUUGUAGC G UAGACCAU	5266	ATGGTCTA GGCTAGCTACAACGA GCTACAAC	14015
7708	UAGCGUAG A CCAUGUUG	5267	CAACATGG GGCTAGCTACAACGA CTACGCTA	14016
7705	CGUAGACC A UGUUGUGG	5268	CCACAACA GGCTAGCTACAACGA GGTCTACG	14017
7703	UAGACCAU G UUGUGGUG	5269	CACCACAA GGCTAGCTACAACGA ATGGTCTA	14018
7700	ACCAUGUU G UGGUGACG	5270	CGTCACCA GGCTAGCTACAACGA AACATGGT	14019
7697	AUGUUGUG G UGACGCAG	5271	CTGCGTCA GGCTAGCTACAACGA CACAACAT	14020
7694	UUGUGGUG A CGCAGCAA	5272	TTGCTGCG GGCTAGCTACAACGA CACCACAA	14021
7692	GUGGUGAC G CAGCAAAG	5273	CTTTGCTG GGCTAGCTACAACGA GTCACCAC	14022
7689	GUGACGCA G CAAAGAGU	5274	ACTCTTTG GGCTAGCTACAACGA TGCCTCAC	14023
7682	AGCAAAGA G UUGCUCAA	5275	TTGAGCAA GGCTAGCTACAACGA TCTTTGCT	14024
7679	AAAGAGUU G CUCAACGC	5276	GCGTTGAG GGCTAGCTACAACGA AACTCTTT	14025
7674	GUUGCUCU A CGCGUUGA	5277	TCAACGCG GGCTAGCTACAACGA TGAGCAAC	14026
7672	UGCUCAC G CGUUGAUG	5278	CATCAACG GGCTAGCTACAACGA GTTGAGCA	14027
7670	CUCAACGC G UUGAUGGG	5279	CCATCAA GGCTAGCTACAACGA GCGTTGAG	14028
7666	ACGCGUUG A UGGGCAAC	5280	GTTGCCCA GGCTAGCTACAACGA CAACGCGT	14029
7662	GUUGAUGG G CAACUUGC	5281	GCAAGTTG GGCTAGCTACAACGA CCATCAAC	14030
7659	GAUGGGCA A CUUGCUIU	5282	AAAGCAAG GGCTAGCTACAACGA TGCCCATC	14031
7655	GGCAACUU G CUUCCUC	5283	GAGGAAAG GGCTAGCTACAACGA AAGTTGCC	14032
7645	UUUCCUCC G CAGCGCAU	5284	ATGCGCTG GGCTAGCTACAACGA GGAGGAAA	14033
7642	CCUCCGCA G CGCAUGGC	5285	GCCATGCG GGCTAGCTACAACGA TGCGGAGG	14034
7640	UCCGCAGC G CAUGGCGU	5286	ACGCCATG GGCTAGCTACAACGA GCTGCGGA	14035
7638	CGCAGCGC A UGGCGUGA	5287	TCACGCCA GGCTAGCTACAACGA GCGTGC	14036
7635	AGCGCAUG G CGUGAUCA	5288	TGATCACG GGCTAGCTACAACGA CATGCGCT	14037
7633	CGCAUGGC G UGAUCAGG	5289	CCTGATCA GGCTAGCTACAACGA GCCATGCG	14038
7630	AUGGCGUG A UCAGGGCG	5290	CGCCCTGA GGCTAGCTACAACGA CACGCCAT	14039
7624	UGAUCAGG G CGCCCGUC	5291	GACGGGCG GGCTAGCTACAACGA CCTGATCA	14040
7622	AUCAGGGC G CCCGUCCA	5292	TGGACGGG GGCTAGCTACAACGA GCCCTGAT	14041
7618	GGGCGCCC G UCCAUGUG	5293	CACATGGA GGCTAGCTACAACGA GGGCGCCC	14042
7614	GCCCGUCC A UGUGUAGG	5294	CCTACACA GGCTAGCTACAACGA GGACGGG	14043
7612	CCGUGCAU G UGUAGGAC	5295	GTCCTACA GGCTAGCTACAACGA ATGGACGG	14044
7610	GUCCAUGU G UAGGACAU	5296	ATGTCTTA GGCTAGCTACAACGA ACATGGAC	14045
7605	UGUGUAGG A CAUCGAGC	5297	GCTCGATG GGCTAGCTACAACGA CCTACACA	14046
7603	UGUAGGAC A UCGAGCAG	5298	CTGCTCGA GGCTAGCTACAACGA GTCCTACA	14047
7598	GACAUCGA G CAGCAGAC	5299	GTCTGCTG GGCTAGCTACAACGA TCGATGTC	14048
7595	AUCGAGCA G CAGACGAC	5300	GTCGTCTG GGCTAGCTACAACGA TGCTCGAT	14049
7591	AGCAGCAG A CGACAUC	5301	GGATGTCT GGCTAGCTACAACGA CTGCTGCT	14050
7588	AGCAGACG A CAUCCUCG	5302	CGAGGATG GGCTAGCTACAACGA CGTCTGCT	14051
7586	CAGACGAC A UCCUCGCC	5303	GGCGAGGA GGCTAGCTACAACGA GTCGTCTG	14052
7580	ACAUCUC G CCAGCCUC	5304	GAGGCTGG GGCTAGCTACAACGA GAGGATGT	14053
7576	CCUCGCCA G CCUCUUG	5305	CGAAGAGG GGCTAGCTACAACGA TGGCGAGG	14054
7568	GCCUCUUC G CUCACGGU	5306	ACCGTGAG GGCTAGCTACAACGA GAAGAGGC	14055
7564	CUUCGCUC A CGGUAGAC	5307	GTCTACCG GGCTAGCTACAACGA GAGCGAAG	14056
7561	CGUCACAG G UAGACCAA	5308	TTGGTCTA GGCTAGCTACAACGA CGTGAGCG	14057
7557	CACGGUAG A CCAAGACC	5309	GGTCTTGG GGCTAGCTACAACGA CTACCGTG	14058
7551	AGACCAAG A CCCGUCGC	5310	GCGACGGG GGCTAGCTACAACGA CTTGGTCT	14059
7547	CAAGACCC G UCGCUGAG	5311	CTCAGCGA GGCTAGCTACAACGA GGGTCTTG	14060
7544	GACCCGUC G CUGAGAUC	5312	GATCTCAG GGCTAGCTACAACGA GACGGGTC	14061
7538	UCGCUGAG A UCGGGAUC	5313	GATCCCGA GGCTAGCTACAACGA CTCAGCGA	14062

7532	AGAUCGGG A UCCCCCGG	5314	CCGGGGGA GGCTAGCTACAACGA CCCGATCT	14063
7524	AUCCCCCG G CUCCCCCU	5315	AGGGGGAG GGCTAGCTACAACGA CGGGGGAT	14064
7506	AAGGGGGG G CAUAGAGG	5316	CCTCTATG GGCTAGCTACAACGA CCCCCCTT	14065
7504	GGGGGGGC A UAGAGGAG	5317	CTCCTCTA GGCTAGCTACAACGA GCCCCCCC	14066
7496	AUAGAGGA G UACGACUC	5318	GAGTCGTA GGCTAGCTACAACGA TCCTCTAT	14067
7494	AGAGGAGU A CGACUCAA	5319	TTGAGTCG GGCTAGCTACAACGA ACTCCTCT	14068
7491	GGAGUACG A CUCAACGU	5320	ACGTTGAG GGCTAGCTACAACGA CGTACTCC	14069
7486	ACGACUCA A CGUCGGAU	5321	ATCCGACG GGCTAGCTACAACGA TGAGTCGT	14070
7484	GACUCAAC G UCGGAUCC	5322	GGATCCGA GGCTAGCTACAACGA GTTGAGTC	14071
7479	AACGUCGG A UCCUGCGU	5323	ACGCAGGA GGCTAGCTACAACGA CCGACGTT	14072
7474	CGGAUCCU G CGUCACCG	5324	CGGTGACG GGCTAGCTACAACGA AGGATCCG	14073
7472	GAUCCUGC G UCACCGUC	5325	GACGGTGA GGCTAGCTACAACGA GCAGGATC	14074
7469	CCUGCGUC A CCGUCAUU	5326	AATGACGG GGCTAGCTACAACGA GACGAGG	14075
7466	GCGUCACC G UCAUUGGA	5327	TCCAATGA GGCTAGCTACAACGA GGTGACGC	14076
7463	UCACCGUC A UUGGAGGU	5328	ACCTCAA GGCTAGCTACAACGA GACGGTGA	14077
7456	CAUUGGAG G UCUGGUCG	5329	CGACCAGA GGCTAGCTACAACGA CTCCAATG	14078
7451	GAGGUCUG G UCGGGGGG	5330	CCCCCCGA GGCTAGCTACAACGA CAGACCTC	14079
7441	CGGGGGGG G CGGUUGCC	5331	GGCAACCG GGCTAGCTACAACGA CCCCCCGG	14080
7438	GGGGGGCG G UUGCCGUA	5332	TACGGCAA GGCTAGCTACAACGA CGCCCCCG	14081
7435	GGGCGGUU G CCGUACCU	5333	AGGTACGG GGCTAGCTACAACGA AACCGCCC	14082
7432	CGGUUGCC G UACCUCUA	5334	TAGAGGTA GGCTAGCTACAACGA GGCAACCG	14083
7430	GUUGCCGU A CCUCUAUC	5335	GATAGAGG GGCTAGCTACAACGA ACGGCAAC	14084
7424	GUACCUCU A UCAGCGGC	5336	GCCGCTGA GGCTAGCTACAACGA AGAGGTAC	14085
7420	CUCUAUCA G CGGCCGAU	5337	ATCGGCCG GGCTAGCTACAACGA TGATAGAG	14086
7417	UAUCAGCG G CCGAUGAU	5338	ATCATCGG GGCTAGCTACAACGA CGTGATA	14087
7413	AGCGGCCG A UGAUUCAG	5339	CTGAATCA GGCTAGCTACAACGA CGGCGGCT	14088
7410	GGCCGAUG A UUCAGAGC	5340	GCTCTGAA GGCTAGCTACAACGA CATCGGCC	14089
7403	GAUUCAGA G CUGCCGAA	5341	TTCGGCAG GGCTAGCTACAACGA TCTGAATC	14090
7400	UCAGAGCU G CCGAAGGU	5342	ACCTTCGG GGCTAGCTACAACGA AGCTCTGA	14091
7393	UGCCGAAG G UCUIUGUG	5343	CACAAAGA GGCTAGCTACAACGA CTTCGGCA	14092
7387	AGGUCUUU G UGGCGAGC	5344	GCTCGCCA GGCTAGCTACAACGA AAAGACCT	14093
7384	UCUIUGUG G CGAGCUCC	5345	GGAGCTCG GGCTAGCTACAACGA CACAAAGA	14094
7380	UGUGGCGA G CUCCGCCA	5346	TGGCGGAG GGCTAGCTACAACGA TCGCCACA	14095
7375	CGAGCUCC G CCAAGGCA	5347	TGCCTTGG GGCTAGCTACAACGA GGAGCTCG	14096
7369	CCGCCAAG G CAGAAGAC	5348	GTCTTCTG GGCTAGCTACAACGA CTTGGCGG	14097
7362	GGCAGAAG A CACGGUGG	5349	CCACCTCG GGCTAGCTACAACGA CTTCTGCC	14098
7360	CAGAAGAC A CGGUGGAC	5350	GTCCACCG GGCTAGCTACAACGA GTTCTGTG	14099
7357	AAGACACG G UGGACUCU	5351	AGAGTCCA GGCTAGCTACAACGA CGTGTCTT	14100
7353	CACGGUGG A CUCUGUCA	5352	TGACAGAG GGCTAGCTACAACGA CCACCGTG	14101
7348	UGGACUCU G UCAGAACA	5353	TGTTCTGA GGCTAGCTACAACGA AGAGTCCA	14102
7342	CUGUCAGA A CAACCGUC	5354	GACGGTTG GGCTAGCTACAACGA TCTGACAG	14103
7339	UCAGAACA A CCGUCCUC	5355	GAGGACGG GGCTAGCTACAACGA TGTCTGA	14104
7336	GAACAACC G UCCUCUUC	5356	GAAGAGGA GGCTAGCTACAACGA GGTGTTC	14105
7323	CUUCCUCC G UGGAGGUG	5357	CACCTCCA GGCTAGCTACAACGA GGAGGAAG	14106
7317	CCGUGGAG G UGGUAUUG	5358	CAATACCA GGCTAGCTACAACGA CTCCACGG	14107
7314	UGGAGGUG G UAUUGGAG	5359	CTCCAATA GGCTAGCTACAACGA CACCTCCA	14108
7312	GAGGUGGU A UUGGAGGG	5360	CCCTCCAA GGCTAGCTACAACGA ACCACCTC	14109
7303	UUGGAGGG G CCUUGGCA	5361	TGCCAAGG GGCTAGCTACAACGA CCCTCCAA	14110
7297	GGGCCUUG G CAGGUGGC	5362	GCCACCTG GGCTAGCTACAACGA CAAGGCCC	14111
7293	CUUGGCAG G UGGCAAUG	5363	CATTGCCA GGCTAGCTACAACGA CTGCCAAG	14112
7290	GGCAGGUG G CAAUGGGC	5364	GCCCATTT GGCTAGCTACAACGA CACCTGCC	14113
7287	AGGUGGCA A UGGGCACC	5365	GGTGCCCA GGCTAGCTACAACGA TGCCACCT	14114
7283	GGCAAUGG G CACCCGUG	5366	CACGGGTG GGCTAGCTACAACGA CCATTGCC	14115
7281	CAAUGGGC A CCCGUGUA	5367	TACACGGG GGCTAGCTACAACGA GCGGTTG	14116
7277	GGGCACCC G UGUACCAC	5368	GTGGTACA GGCTAGCTACAACGA GGGTGCCC	14117
7275	GCACCCGU G UACCACCG	5369	CGGTGTA GGCTAGCTACAACGA ACGGGTGC	14118

7273	ACCCGUGU A CCACCGGA	5370	TCCGGTGG GGCTAGCTACAACGA ACACGGGT	14119
7270	CGUGUACC A CCGGAGGG	5371	CCCTCCGG GGCTAGCTACAACGA GGTACACG	14120
7261	CCGGAGGG A CGUAGUCU	5372	AGACTACG GGCTAGCTACAACGA CCCTCCGG	14121
7259	GGAGGGAC G UAGUCUGG	5373	CCAGACTA GGCTAGCTACAACGA GTCCCTCC	14122
7256	GGGACGUA G UCUGGGUC	5374	GACCCAGA GGCTAGCTACAACGA TACGTCCC	14123
7250	UAGUCUGG G UCUUCCA	5375	TGGAAAGA GGCTAGCTACAACGA CCAGACTA	14124
7239	UUUCCAGG G CUCUAGUA	5376	TACTAGAG GGCTAGCTACAACGA CCTGGAAA	14125
7233	GGGCUCUA G UAGUGGAG	5377	CTCCACTA GGCTAGCTACAACGA TAGAGCCC	14126
7230	CUCUAGUA G UGGAGGGU	5378	ACCCTCCA GGCTAGCTACAACGA TACTAGAG	14127
7223	AGUGGAGG G UUGUAAUC	5379	GATTACAA GGCTAGCTACAACGA CCTCCACT	14128
7220	GGAGGGUU G UAAUCCGG	5380	CCGGATTA GGCTAGCTACAACGA AACCTCC	14129
7217	GGGUUGUA A UCCGGGCG	5381	CGCCCGGA GGCTAGCTACAACGA TACAACCC	14130
7211	UAAUCCGG G CGUGCCCA	5382	TGGGCAGG GGCTAGCTACAACGA CCGGATTA	14131
7209	AUCCGGGC G UGCCCAUA	5383	TATGGGCA GGCTAGCTACAACGA GCCCGGAT	14132
7207	CCGGGCGU G CCCAU AUG	5384	CATATGGG GGCTAGCTACAACGA ACGCCCGG	14133
7203	GCGUGCCC A UAUGGGUA	5385	TACCCATA GGCTAGCTACAACGA GGGCACGC	14134
7201	GUGCCCAU A UGGGUAAC	5386	GTTACCCA GGCTAGCTACAACGA ATGGGCAC	14135
7197	CCAU AUGG G UAACGUG	5387	CAGCGTTA GGCTAGCTACAACGA CCATATGG	14136
7194	UAUGGGUA A CGCUGAAG	5388	CTTCAGCG GGCTAGCTACAACGA TACCCATA	14137
7192	UGGGUAAC G CUGAAGGA	5389	TCCTTCAG GGCTAGCTACAACGA GTTACCCA	14138
7182	UGAAGGAA A CUUCUUGG	5390	CCAAGAAG GGCTAGCTACAACGA TTCCTTCA	14139
7173	CUUCUUGG A UUUCGCA	5391	TGCGGAAA GGCTAGCTACAACGA CCAAGAAG	14140
7167	GGAUUCC G CAGGAUCU	5392	AGATCCTG GGCTAGCTACAACGA GGAATCC	14141
7162	UCCGCAGG A UCUCGCC	5393	GGCGGAGA GGCTAGCTACAACGA CCTGCGGA	14142
7156	GGAUCUCC G CCGGAAUG	5394	CATTCCGG GGCTAGCTACAACGA GGAGATCC	14143
7150	CCGCCGGA A UGGACACC	5395	GGTGTCCA GGCTAGCTACAACGA TCCGGCGG	14144
7146	CGGAAUGG A CACCUCUC	5396	GAGAGGTG GGCTAGCTACAACGA CCATTCCG	14145
7144	GAAUGGAC A CCUCUCUC	5397	GAGAGAGG GGCTAGCTACAACGA GTCCATTC	14146
7133	UCUCUCUC A UCCUCCUC	5398	GAGGAGGA GGCTAGCTACAACGA GAGAGAGA	14147
7123	CCUCCUGG G CUCGAAGC	5399	GCTTCGAG GGCTAGCTACAACGA GGAGAGG	14148
7116	CGCUCGAA G CGGGUCAA	5400	TTGACCCG GGCTAGCTACAACGA TTCGAGCG	14149
7112	CGAAGCGG G UCAAAAGA	5401	TCTTTTGA GGCTAGCTACAACGA CCGCTTCG	14150
7103	UCAAAAGA G UCCAGGGU	5402	ACCCTGGA GGCTAGCTACAACGA TCTTTTGA	14151
7096	AGUCCAGG G UAACUACC	5403	GGTAGTTA GGCTAGCTACAACGA CCTGGACT	14152
7093	CCAGGGUA A CUACCUUA	5404	TAAGGTAG GGCTAGCTACAACGA TACCCTGG	14153
7090	GGGUAACU A CCUAUUC	5405	GAATAAGG GGCTAGCTACAACGA AGTTACCC	14154
7085	ACUACCUU A UUCUCUGA	5406	TCAGAGAA GGCTAGCTACAACGA AAGGTAGT	14155
7077	AUUCUCUG A CUCCACGC	5407	GCGTGGAG GGCTAGCTACAACGA CAGAGAAT	14156
7072	CUGACUCC A CGCGAGUG	5408	CACTCGCG GGCTAGCTACAACGA GAGGATCAG	14157
7070	GACUCCAC G CGAGUGAU	5409	ATCACTCG GGCTAGCTACAACGA GTGGAGTC	14158
7066	CCACGCGA G UGAUGUUA	5410	TAACATCA GGCTAGCTACAACGA TCGCGTGG	14159
7063	CGCGAGUG A UGUUACCG	5411	CGGTAACA GGCTAGCTACAACGA CACTCGCG	14160
7061	CGAGUGAU G UUACCGCC	5412	GGCGGTAA GGCTAGCTACAACGA ATCACTCG	14161
7058	GUGAUGUU A CCGCCCAU	5413	ATGGGCGG GGCTAGCTACAACGA AACATCAC	14162
7055	AUGUUACC G CCCAUCUC	5414	GAGATGGG GGCTAGCTACAACGA GGTAACAT	14163
7051	UACCGCCC A UCUCUUGC	5415	GCAGGAGA GGCTAGCTACAACGA GGGCGGTA	14164
7044	CAUCUCCU G CCGCCACA	5416	TGTGGCGG GGCTAGCTACAACGA AGGAGATG	14165
7041	CUCCUGCC G CCACAGGA	5417	TCCTGTGG GGCTAGCTACAACGA GGCAGGAG	14166
7038	CUGCCGCC A CAGGAGGU	5418	ACCTCCTG GGCTAGCTACAACGA GCGGCGAG	14167
7031	CACAGGAG G UUGGCCUC	5419	GAGGCCAA GGCTAGCTACAACGA CTCCTGTG	14168
7027	GGAGGUUG G CCUCGAUG	5420	CATCGAGG GGCTAGCTACAACGA CAACCTCC	14169
7021	UGGCCUCG A UGAGGUCA	5421	TGACCTCA GGCTAGCTACAACGA CGAGGCCA	14170
7016	UGGAUGAG G UCAAAGUC	5422	GACTTTGA GGCTAGCTACAACGA CTCATCGA	14171
7010	AGGUCAAA G UCUGGGGA	5423	TCCCCAGA GGCTAGCTACAACGA TTTGACCT	14172
7001	UCUGGGGA G UCAUAUUG	5424	CAATATGA GGCTAGCTACAACGA TCCCCAGA	14173
6998	GGGAGUC A UAUUGGU	5425	ACCCAATA GGCTAGCTACAACGA GACTCCCC	14174



6996	GGAGUCAU A UUGGGUAA	5426	TTACCCAA GGCTAGCTACAACGA ATGACTCC	14175
6991	CAUAUUGG G UAAUGUAU	5427	ATACATTA GGCTAGCTACAACGA CCAATATG	14176
6988	AUUGGGUA A UGUUAUGUC	5428	GACATACA GGCTAGCTACAACGA TACCCAAT	14177
6986	UGGGUAAU G UAUGUCGC	5429	GCGACATA GGCTAGCTACAACGA ATTACCCA	14178
6984	GGUAAUGU A UGUCGCCU	5430	AGGCGACA GGCTAGCTACAACGA ACATTACC	14179
6982	UAAUGUAU G UCGCCUUC	5431	GAAGGCGA GGCTAGCTACAACGA ATACATTA	14180
6979	UGUAUGUC G CCUUCGAA	5432	TTCGAAGG GGCTAGCTACAACGA GACATACA	14181
6966	CGAAGAAG G CGCAGACA	5433	TGTCTGCG GGCTAGCTACAACGA CTTCTTCG	14182
6964	AAGAAGGC G CAGACAGC	5434	GCTGTCTG GGCTAGCTACAACGA GCCTTCTT	14183
6960	AGGCGCAG A CAGCUGGC	5435	GCCAGCTG GGCTAGCTACAACGA CTGCGCCT	14184
6957	CGCAGACA G CUGGCUAG	5436	CTAGCCAG GGCTAGCTACAACGA TGTCTGCG	14185
6953	GACAGCUG G CUAGCUGA	5437	TCAGCTAG GGCTAGCTACAACGA CAGCTGTC	14186
6949	GCUGGCUA G CUGAGGAG	5438	CTCCTCAG GGCTAGCTACAACGA TAGCCAGC	14187
6941	GCUGAGGA G CUGGCCAA	5439	TTGGCCAG GGCTAGCTACAACGA TCCTCAGC	14188
6937	AGGAGCUG G CCAAGGAG	5440	CTCCTTGG GGCTAGCTACAACGA CAGCTCCT	14189
6921	GGGGGGAG A CCCCCUGG	5441	CCAGGGGG GGCTAGCTACAACGA CTCCCCC	14190
6913	ACCCCCUG G CCAGCCUA	5442	TAGGCTGG GGCTAGCTACAACGA CAGGGGGT	14191
6909	CCUGGCCA G CCUACGCU	5443	AGCGTAGG GGCTAGCTACAACGA TGGCCAGG	14192
6905	GCCAGCCU A CGCUUAGC	5444	CTAAGCG GGCTAGCTACAACGA AGGCTGGC	14193
6903	CAGCCUAC G CUUAGCCG	5445	CGGCTAAG GGCTAGCTACAACGA GTAGGCTG	14194
6898	UACGCUUA G CCGUCUCU	5446	AGAGACGG GGCTAGCTACAACGA TAAGCGTA	14195
6895	GCUUAGCC G UCUCUCCU	5447	AGGAGAGA GGCTAGCTACAACGA GGCTAAGC	14196
6886	UCUCUCCU G UAAUGUGG	5448	CCACATTA GGCTAGCTACAACGA AGGAGAGA	14197
6883	CUCUGUA A UGUGGGAG	5449	CTCCCACA GGCTAGCTACAACGA TACAGGAG	14198
6881	CCUGUAAU G UGGGAGGG	5450	CCCTCCCA GGCTAGCTACAACGA ATTACAGG	14199
6872	UGGGAGGG G UCGGUGAG	5451	CTCACCGA GGCTAGCTACAACGA CCCTCCCA	14200
6868	AGGGGUCG G UGAGCAUG	5452	CATGCTCA GGCTAGCTACAACGA CGACCCCT	14201
6864	GUCGGUGA G CAUGGACG	5453	CGTCCATG GGCTAGCTACAACGA TCACCGAC	14202
6862	CGGUGAGC A UGGACGUG	5454	CACGTCCA GGCTAGCTACAACGA GCTCACCG	14203
6858	GAGCAUGG A CGUGAGCA	5455	TGCTCACG GGCTAGCTACAACGA CCATGCTC	14204
6856	GCAUGGAC G UGAGCACU	5456	AGTGCTCA GGCTAGCTACAACGA GTCCATGC	14205
6852	GGACGUGA G CACUGCUA	5457	TAGCAGTG GGCTAGCTACAACGA TCACGTCC	14206
6850	ACGUGAGC A CUGCUACA	5458	TGTAGCAG GGCTAGCTACAACGA GCTCACGT	14207
6847	UGAGCAGU G CUACAUC	5459	GGATGTAG GGCTAGCTACAACGA AGTGCTCA	14208
6844	GCACUGCU A CAUCCGGU	5460	ACCGGATG GGCTAGCTACAACGA AGCAGTGC	14209
6842	ACUGCUAC A UCCGGUUC	5461	GAACCGGA GGCTAGCTACAACGA GTGACAGT	14210
6837	UACAUCG G UUCGGGCU	5462	AGCCCGAA GGCTAGCTACAACGA CGGATGTA	14211
6831	CGGUUCGG G CUCGCAUG	5463	CATGCGAG GGCTAGCTACAACGA CCGAACCG	14212
6827	UCGGGCUC G CAUGGGAG	5464	CTCCCATG GGCTAGCTACAACGA GAGCCCGA	14213
6825	GGGCUCGC A UGGGAGCU	5465	AGCTCCCA GGCTAGCTACAACGA GCGAGCCC	14214
6819	GCAUGGGA G CUGUGACC	5466	GGTCACAG GGCTAGCTACAACGA TCCATATC	14215
6816	UGGGAGCU G UGACCCAA	5467	TTGGGTCA GGCTAGCTACAACGA AGTCCCA	14216
6813	GAGCUGUG A CCCAACCA	5468	TGTTGGG GGCTAGCTACAACGA CACAGCTC	14217
6808	GUGACCCA A CCAGGUUA	5469	ATACCTGG GGCTAGCTACAACGA TGGGTGAC	14218
6803	CCAACCAG G UAUUGGUU	5470	AACCAATA GGCTAGCTACAACGA CTGGTTGG	14219
6801	AACCAGGU A UUGGUUGA	5471	TCAACCAA GGCTAGCTACAACGA ACCTGGTT	14220
6797	AGGUUAUG G UUGAGCCC	5472	GGGCTCAA GGCTAGCTACAACGA CAATACCT	14221
6792	UUGGUUGA G CCCGACCU	5473	AGGTCGGG GGCTAGCTACAACGA TCAACCAA	14222
6787	UGAGCCCG A CCUGGAAU	5474	ATTCCAGG GGCTAGCTACAACGA CGGGCTCA	14223
6780	GACCUUGA A UGUGACCU	5475	AGGTGACA GGCTAGCTACAACGA TCCAGGTC	14224
6778	CCUGGAAU G UGACCUCC	5476	GGAGTCA GGCTAGCTACAACGA ATTCCAGG	14225
6775	GGAAUGUG A CCUCCUCC	5477	GGAGGAGG GGCTAGCTACAACGA CACATTCC	14226
6765	CUCUCCC G UAGGAGAG	5478	CTCTCCTA GGCTAGCTACAACGA GGGAGGAG	14227
6756	UAGGAGAG G UCCACACG	5479	CGTGTGGA GGCTAGCTACAACGA CTCTCCTA	14228
6752	AGAGGUCC A CACGCCGG	5480	CCGGCGTG GGCTAGCTACAACGA GGACCTCT	14229
6750	AGGUCCAC A CGCCGGAG	5481	CTCCGGCG GGCTAGCTACAACGA GTGGACCT	14230



6748	GUCCACAC G CCGGAGCG	5482	CGCTCCGG GGCTAGCTACAACGA GTGTGGAC	14231
6742	ACGCCCGA G CGUUCUG	5483	CAGAAACG GGCTAGCTACAACGA TCCGGCGT	14232
6740	GCCGGAGC G UUUCUGUG	5484	CACAGAAA GGCTAGCTACAACGA GCTCCGGC	14233
6734	GCGUUCU G UGCAGGCG	5485	CGCCTGCA GGCTAGCTACAACGA AGAAACGC	14234
6732	GUUUCUGU G CAGGCGUA	5486	TACGCC TG GGCTAGCTACAACGA ACAGAAAC	14235
6728	CUGUGCAG G CGUACCCC	5487	GGGGTACG GGCTAGCTACAACGA CTGCACAG	14236
6726	GUGCAGGC G UACCCCAU	5488	ATGGGGTA GGCTAGCTACAACGA GCCTGCAC	14237
6724	GCAGGCGU A CCCC AUCC	5489	GGATGGGG GGCTAGCTACAACGA ACGCTGTC	14238
6719	CGUACCCC A UCCACUUC	5490	GAAGTGGA GGCTAGCTACAACGA GGGGTACG	14239
6715	CCCCAUCC A CUUCCGUG	5491	CACGGAAG GGCTAGCTACAACGA GGATGGGG	14240
6709	CCACUUC G UGAAGAAU	5492	ATTCTTCA GGCTAGCTACAACGA GGAAGTGG	14241
6702	CGUGAAGA A UUCGGGGG	5493	CCCCCGAA GGCTAGCTACAACGA TCTTCACG	14242
6693	UUCGGGGG G CGGAACCU	5494	AGGTTCCG GGCTAGCTACAACGA CCCCCGAA	14243
6688	GGGCGCGA A CCUGGCAC	5495	GTGCCAGG GGCTAGCTACAACGA TCCGCCCC	14244
6683	GGAACCG G CACGGGCA	5496	TGCCCGTG GGCTAGCTACAACGA CAGGTTCC	14245
6681	AACCUUGC A CGGGCAU	5497	AATGCCCC GGCTAGCTACAACGA GCCAGGTT	14246
6677	UGGCACGG G CAUUUUAC	5498	GTAAAATG GGCTAGCTACAACGA CCGTGCCA	14247
6675	GCACGGGC A UUUUACGU	5499	ACGTAAAA GGCTAGCTACAACGA GCCCGTGC	14248
6670	GGCAUUUU A CGUUGUCA	5500	TGACAACG GGCTAGCTACAACGA AAAATGCC	14249
6668	CAUUUJAC G UUGUCAGU	5501	ACTGACAA GGCTAGCTACAACGA GTAAAATG	14250
6665	UUUACGUU G UCAGUGGU	5502	ACCACTGA GGCTAGCTACAACGA AACGTAAA	14251
6661	CGUUGUCA G UGGUCAUG	5503	CATGACCA GGCTAGCTACAACGA TGACAACG	14252
6658	UGUCAGUG G UCAUGCCC	5504	GGGATAGA GGCTAGCTACAACGA CACTGACA	14253
6655	CAGUGGUC A UGCCCCGUC	5505	GACGGGCA GGCTAGCTACAACGA GACCACTG	14254
6653	GUGGUCAU G CCCGUCAC	5506	GTGACGGG GGCTAGCTACAACGA ATGACCAC	14255
6649	UCAUGCCC G UCACGUAG	5507	CTACGTGA GGCTAGCTACAACGA GGGCATGA	14256
6646	UGCCCCGUC A CGUAGUGG	5508	CCACTACG GGCTAGCTACAACGA GACGGGCA	14257
6644	CCCGUCAC G UAGUGGAA	5509	TTCCACTA GGCTAGCTACAACGA GTGACGGG	14258
6641	GUCACGUA G UGGAAAUC	5510	GATTTCCA GGCTAGCTACAACGA TACGTGAC	14259
6635	UAGUGGAA A UCCCCAC	5511	TGGGGGGA GGCTAGCTACAACGA TTCCACTA	14260
6628	AAUCCCCC A CCCGCGUA	5512	GTCGGGGG GGCTAGCTACAACGA GGGGATTT	14261
6624	CCCCACCC G CGUAACCU	5513	AGGTTACG GGCTAGCTACAACGA GGGTGGGG	14262
6622	CCACCCCG G UAACCUCC	5514	GGAGGTTA GGCTAGCTACAACGA GCGGGTGG	14263
6619	CCCGCGUA A CCUCCACG	5515	CGTGGAGG GGCTAGCTACAACGA TACGCGGG	14264
6613	UAACCUCC A CGUACUCC	5516	GGAGTACG GGCTAGCTACAACGA GGAGGTTA	14265
6611	ACCUCCAC G UACUCCUC	5517	GAGGAGTA GGCTAGCTACAACGA GTGGAGGT	14266
6609	CUCCACGU A CUCCUCAG	5518	CTGAGGAG GGCTAGCTACAACGA ACGTGGAG	14267
6601	ACUCCUCA G CGGCCACC	5519	GGTGGCCG GGCTAGCTACAACGA TGAGGAGT	14268
6598	CCUCAGCG G CCACCCGC	5520	CGGGGTGG GGCTAGCTACAACGA CGCTGAGG	14269
6595	CAGCGGCC A CCCGCCAU	5521	ATGGCGGG GGCTAGCTACAACGA GGCCGCTG	14270
6591	GGCCACCC G CCAUAGCG	5522	CGCTATGG GGCTAGCTACAACGA GGGTGGCC	14271
6588	CACCCGCC A UAGCGCCC	5523	GGGCGCTA GGCTAGCTACAACGA GCGGGGTG	14272
6585	CCGCCAUA G CGCCCUAG	5524	CTAGGGCG GGCTAGCTACAACGA TATGGCGG	14273
6583	GCCAUAGC G CCCUAGAA	5525	TTCTAGGG GGCTAGCTACAACGA GCTATGGC	14274
6575	GCCCUAGA A UAGUUUGG	5526	CCAAACTA GGCTAGCTACAACGA TCTAGGGC	14275
6572	CUAGAAUA G UUUGGCGC	5527	GCGCCAAA GGCTAGCTACAACGA TATTCTAG	14276
6567	AUAGUUUG G CGCCGGGG	5528	CCCCGGCG GGCTAGCTACAACGA CAAACTAT	14277
6565	AGUUUGGC G CCGGGGAG	5529	CTCCCCGG GGCTAGCTACAACGA GCCAAACT	14278
6555	CGGGGAGG G UGUGCAGG	5530	CCTGCACA GGCTAGCTACAACGA CCTCCCCG	14279
6553	GGGAGGGU G UGCAGGGG	5531	CCCCTGCA GGCTAGCTACAACGA ACCCTCCC	14280
6551	GAGGGUGU G CAGGGGCC	5532	GGCCCTTG GGCTAGCTACAACGA ACACCCTC	14281
6545	GUGCAGGG G CCCGUGGU	5533	ACCACGGG GGCTAGCTACAACGA CCCTGCAC	14282
6541	AGGGGCCG G UGUGUAU	5534	ATACACCA GGCTAGCTACAACGA GGGCCCCCT	14283
6538	GGCCCCGUG G UGUAGCG	5535	CGCATACA GGCTAGCTACAACGA CACGGGCC	14284
6536	CCCGUGGU G UAUGCGUU	5536	AACGCATA GGCTAGCTACAACGA ACCACGGG	14285
6534	CGUGGUGU A UGCGUUGA	5537	TCAACGCA GGCTAGCTACAACGA ACACCACG	14286

6532	UGGUGUUAU G CGUUGAUG	5538	CATCAACG GGCTAGCTACAACGA ATACACCA	14287
6530	GUGUAUGC G UUGAUGGG	5539	CCCATCAA GGCTAGCTACAACGA GCATACAC	14288
6526	AUGCGUUG A UGGGGAAU	5540	ATTCCTCA GGCTAGCTACAACGA CAACGCAT	14289
6519	GAUGGGGA A UGUUCCAU	5541	ATGGAACA GGCTAGCTACAACGA TCCCCATC	14290
6517	UGGGGAAU G UUCCAUGC	5542	GCATGGAA GGCTAGCTACAACGA ATTCCCCA	14291
6512	AAUGUUC C A UGCCACGU	5543	ACGTGGCA GGCTAGCTACAACGA GGAACATT	14292
6510	UGUCCAU G CCACGUGU	5544	ACACGTGG GGCTAGCTACAACGA ATGGAACA	14293
6507	UCCAUGCC A CGUGUUGC	5545	GCAACACG GGCTAGCTACAACGA GGCATGGA	14294
6505	CAUGCCAC G UGUUGCUA	5546	TAGCAACA GGCTAGCTACAACGA GTGGCATG	14295
6503	UGCCACGU G UGCUACA	5547	TGTGTTCA GGCTAGCTACAACGA ACGTGGCA	14296
6500	CACGUGU G CUACAGU	5548	ACCTGTAG GGCTAGCTACAACGA AACAGCTG	14297
6497	GUGUUGCU A CAGGUCUU	5549	AAGACCTG GGCTAGCTACAACGA AGCAACAC	14298
6493	UGCUACAG G UCUUAGGC	5550	GCCTAAGA GGCTAGCTACAACGA CTGTAGCA	14299
6486	GGUCUUG G CCCGACGA	5551	TCGTGGGG GGCTAGCTACAACGA CTAAGACC	14300
6481	UAGGCCCG A CGAUCCUC	5552	GAGGATCG GGCTAGCTACAACGA CGGGCCTA	14301
6478	GCCCCAGC A UCCUCAUG	5553	CATGAGGA GGCTAGCTACAACGA CGTCGGGC	14302
6472	CGAUCCUC A UGGAACCG	5554	CGGTTCCA GGCTAGCTACAACGA GAGGATCG	14303
6467	CUCAUGGA A CCGUUCUU	5555	AAGAACGG GGCTAGCTACAACGA TCCATGAG	14304
6464	AUGGAACC G UUCUUGAC	5556	GTCAAGAA GGCTAGCTACAACGA GGTTCAT	14305
6457	CGUUCUUG A CAUGUCCA	5557	TGGACATG GGCTAGCTACAACGA CAAGAACG	14306
6455	UUCUUGAC A UGUCCAGU	5558	ACTGGACA GGCTAGCTACAACGA GTCAAGAA	14307
6453	CUUGACAU G UCCAGUGA	5559	TCATGGA GGCTAGCTACAACGA ATGTCAAG	14308
6448	CAUGUCCA G UGAUCUGC	5560	GCAGATCA GGCTAGCTACAACGA TGGACATG	14309
6445	GUCCAGUG A UCUGCGCU	5561	AGCGCAGA GGCTAGCTACAACGA CACTGGAC	14310
6441	AGUGAUCU G CGCUCGCG	5562	GCGGAGCG GGCTAGCTACAACGA AGATCACT	14311
6439	UGAUCUG G CUCCGCAU	5563	ATGCGGAG GGCTAGCTACAACGA GCAGATCA	14312
6434	UGCGCUCC G CAUGGGCA	5564	TGCCCATG GGCTAGCTACAACGA GGAGCGCA	14313
6432	CGCUCGCG A UGGGACAG	5565	CCTGCCCA GGCTAGCTACAACGA CCGGAGCG	14314
6428	CCGCAUGG G CAGGUGGU	5566	ACCACCTG GGCTAGCTACAACGA CCATGCGG	14315
6424	AUGGGCAG G UGUUUGC	5567	GCAAACCA GGCTAGCTACAACGA CTGCCCAT	14316
6421	GGCAGUG G UUUGCAUG	5568	CATGCAA GGCTAGCTACAACGA CACCTGCC	14317
6417	GGUGGUU G CAUGAUAC	5569	GTATCATG GGCTAGCTACAACGA AAACCACC	14318
6415	UGGUUUGC A UGAUACCG	5570	CGGTATCA GGCTAGCTACAACGA GCAAACCA	14319
6412	UUUGCAUG A UACCGUCU	5571	AGACGGTA GGCTAGCTACAACGA CATGCAA	14320
6410	UGCAUGAU A CCGUCUCC	5572	GGAGACGG GGCTAGCTACAACGA ATCATGCA	14321
6407	AUGAUACC G UCUCGCG	5573	CGGGGAGA GGCTAGCTACAACGA GGTATCAT	14322
6399	GUCUCCCC G CCAGACCC	5574	GGGTCTGG GGCTAGCTACAACGA GGGGAGAC	14323
6394	CCCGCCAG A CCCCCUG	5575	CAGGGGGG GGCTAGCTACAACGA CTGGCGGG	14324
6386	ACCCCCU G UACCCACG	5576	CGTGGGTA GGCTAGCTACAACGA AGGGGGGT	14325
6384	CCCCUGU A CCCACGUU	5577	AACGTGGG GGCTAGCTACAACGA ACAGGGGG	14326
6380	CUGUACCC A CGUUGGCA	5578	TGCCAACG GGCTAGCTACAACGA GGGTACAG	14327
6378	GUACCCAC G UUGGCAUG	5579	CATGCCAA GGCTAGCTACAACGA GTGGGTAC	14328
6374	CCACGUUG G CAUGAGAA	5580	TTCTCATG GGCTAGCTACAACGA CAACGTGG	14329
6372	ACGUUGG A UGAGAAGA	5581	TCTTCTCA GGCTAGCTACAACGA GCCAACGT	14330
6358	AGAAAGGG A CUCCCGGC	5582	GCCGGGAG GGCTAGCTACAACGA CCTTTCT	14331
6351	GACUCCCG G CAACCGCG	5583	CGCGGTTG GGCTAGCTACAACGA CGGGAGTC	14332
6348	UCCCGGCA A CCGCGGCA	5584	TGCCCGGG GGCTAGCTACAACGA TGCCGGGA	14333
6345	CGGCAACC G CGGAGGA	5585	TCCTGCCG GGCTAGCTACAACGA GGTTGCCG	14334
6342	CAACCGCG G CAGGAGCU	5586	AGCTCCTG GGCTAGCTACAACGA CGCGGTTG	14335
6336	CGGCAGGA G CUUGGACU	5587	AGTCCAAG GGCTAGCTACAACGA TCCTGCCG	14336
6330	GAGCUUGG A CUGAAGCC	5588	GGCTTCA GGCTAGCTACAACGA CCAAGCTC	14337
6324	GGACUGAA G CCAGGUCU	5589	AGACCTGG GGCTAGCTACAACGA TTCAGTCC	14338
6319	GAAGCCAG G UCUGAAG	5590	CTTCAAGA GGCTAGCTACAACGA CTGGCTTC	14339
6311	GUCUUGAA G UCAGUCAA	5591	TTGACTGA GGCTAGCTACAACGA TTCAAGAC	14340
6307	UGAAGUCA G UCAACACC	5592	GGTGTGTA GGCTAGCTACAACGA TGACTTCA	14341
6303	GUCAGUCA A CACCGUGC	5593	GCACGGTG GGCTAGCTACAACGA TGACTGAC	14342

6301	CAGUCAAC A CCGUGCAU	5594	ATGCACGG GGCTAGCTACAACGA GTTGACTG	14343
6298	UCAACACC G UGCAUAUC	5595	GATATGCA GGCTAGCTACAACGA GGTGTTGA	14344
6296	AACACCGU G CAUAUCCA	5596	TGGATATG GGCTAGCTACAACGA ACGGTGTT	14345
6294	CACCGUGC A UAUCAGU	5597	ACTGGATA GGCTAGCTACAACGA GCACGGTG	14346
6292	CCGUGCAU A UCCAGUCC	5598	GGACTGGA GGCTAGCTACAACGA ATGCACGG	14347
6287	CAUAUCCA G UCCCAAAC	5599	GTTTGGGA GGCTAGCTACAACGA TGGATATG	14348
6280	AGUCCCAA A CAUCCCUU	5600	AAGGGATG GGCTAGCTACAACGA TTGGGACT	14349
6278	UCCCAAAC A UCCCUUAG	5601	CTAAGGGA GGCTAGCTACAACGA GTTGGGA	14350
6270	AUCCCUUA G CCACGAGC	5602	GCTCGTGG GGCTAGCTACAACGA TAAGGGAT	14351
6267	CCUUAGCC A CGAGCCGG	5603	CCGGCTCG GGCTAGCTACAACGA GGCTAAGG	14352
6263	AGCCACGA G CCGGAACA	5604	TGTTCCGG GGCTAGCTACAACGA TCGTGGCT	14353
6257	GAGCCGGA A CAUGGCGU	5605	ACGCCATG GGCTAGCTACAACGA TCCGGCTC	14354
6255	GCCGGAAC A UGGCGUGG	5606	CCACGCCA GGCTAGCTACAACGA GTTCCGGC	14355
6252	GGAACAUG G CGUGGAGC	5607	GCTCCACG GGCTAGCTACAACGA CATGTTCC	14356
6250	AACAUGGC G UGGAGCAG	5608	CTGCTCCA GGCTAGCTACAACGA GCCATGTT	14357
6245	GGCGUGGA G CAGUCCUC	5609	GAGGACTG GGCTAGCTACAACGA TCCACGCC	14358
6242	GUGGAGCA G UCCUCAUU	5610	AATGAGGA GGCTAGCTACAACGA TGCTCCAC	14359
6236	CAGUCCUC A UUGAUCCA	5611	TGGATCAA GGCTAGCTACAACGA GAGGACTG	14360
6232	CCUCAUUG A UCCACUGA	5612	TCAGTGGA GGCTAGCTACAACGA CAATGAGG	14361
6228	AUUGAUCC A CUGAUGGA	5613	TCCATCAG GGCTAGCTACAACGA GGATCAAT	14362
6224	AUCCACUG A UGGAGCCU	5614	AGGCTCCA GGCTAGCTACAACGA CAGTGGAT	14363
6219	CUGAUGGA G CCUCCUCA	5615	TGAGGAGG GGCTAGCTACAACGA TCCATCAG	14364
6210	CCUCCUCA G CAGCUGAG	5616	CTCAGCTG GGCTAGCTACAACGA TGAGGAGG	14365
6207	CCUCAGCA G CUGAGUGA	5617	TCACTCAG GGCTAGCTACAACGA TGCTGAGG	14366
6202	GCAGCUGA G UGAUGGUG	5618	CACCATCA GGCTAGCTACAACGA TCAGCTGC	14367
6199	GCUGAGUG A UGGUGAGG	5619	CCTCACCA GGCTAGCTACAACGA CACTCAGC	14368
6196	GAGUGAUG G UGAGGCUG	5620	CAGCCTCA GGCTAGCTACAACGA CATCACTC	14369
6191	AUGGUGAG G CUGGAGAG	5621	CTCTCCAG GGCTAGCTACAACGA CTCACCAT	14370
6181	UGGAGAGG A UUUGUGUG	5622	CACACAAA GGCTAGCTACAACGA CCTCTCCA	14371
6177	GAGGAUUU G UGUGACGC	5623	GCGTCACA GGCTAGCTACAACGA AAATCCTC	14372
6175	GGAUUUGU G UGACGCGC	5624	GCGGTCAC GGCTAGCTACAACGA ACAATCC	14373
6172	UUUGUGUG A CGCGCGCC	5625	GGCGCGCG GGCTAGCTACAACGA CACACAAA	14374
6170	UGUGUGAC G CGCGCCGC	5626	GCGGCGCG GGCTAGCTACAACGA GTCACACA	14375
6168	UGUGACGC G CGCCGUG	5627	CAGCGGCG GGCTAGCTACAACGA GCGTCACA	14376
6166	UGACGCGC G CCGCUGCG	5628	CGCAGCGG GGCTAGCTACAACGA GCGGTCAC	14377
6163	CGCGCGCC G CUGCGUCG	5629	CGACGCAG GGCTAGCTACAACGA GGCGGCGG	14378
6160	GCGCCGCU G CGUCGCUC	5630	GAGCGACG GGCTAGCTACAACGA AGCGGCGC	14379
6158	GCCGCGUC G UCGCUCUC	5631	GAGAGCGA GGCTAGCTACAACGA GCAGCGGC	14380
6155	GCUGCGUC G CUCUCAGG	5632	CCTGAGAG GGCTAGCTACAACGA GACGCAGC	14381
6147	GCUCUCAG G CACAUAGU	5633	ACTATGTG GGCTAGCTACAACGA CTGAGAGC	14382
6145	UCUCAGGC A CAUAGUGC	5634	GCACTATG GGCTAGCTACAACGA GCCTGAGA	14383
6143	UCAGGCAC A UAGUGCGU	5635	ACGCACTA GGCTAGCTACAACGA GTGCCTGA	14384
6140	GGCACAUA G UGCGUGGG	5636	CCCACGCA GGCTAGCTACAACGA TATGTGCC	14385
6138	CACAUAGU G CGUGGGGG	5637	CCCCCAGG GGCTAGCTACAACGA ACTATGTG	14386
6136	CAUAGUGC G UGGGGGAG	5638	CTCCCCCA GGCTAGCTACAACGA GCACTATG	14387
6127	UGGGGGAG A CAUGGUUG	5639	CAACCATG GGCTAGCTACAACGA CTCCCCCA	14388
6125	GGGAGAGC A UGGUUGCC	5640	GGCAACCA GGCTAGCTACAACGA GTCTCCCC	14389
6122	GAGACAUG G UUGCCCCG	5641	CGGGGCAA GGCTAGCTACAACGA CATGTCTC	14390
6119	ACAUGGUU G CCCC CGCA	5642	TCGCGGGG GGCTAGCTACAACGA AACCATGT	14391
6114	GUUGCCCC G CGAAGCGA	5643	TCGCTTCG GGCTAGCTACAACGA GGGGCAAC	14392
6109	CCCGCGAA G CGAACGCU	5644	AGCGTTTC GGCTAGCTACAACGA TTCGCGGG	14393
6105	CGAAGCGA A CGCUAUCA	5645	TGATAGCG GGCTAGCTACAACGA TCGCTTCG	14394
6103	AAGCGAAC G CUAUCAGC	5646	GCTGATAG GGCTAGCTACAACGA GTTCGCTT	14395
6100	CGAACGCU A UCAGCCGA	5647	TCGGCTGA GGCTAGCTACAACGA AGCGTTCG	14396
6096	CGCUAUCA G CCGAUUCA	5648	TGAATCGG GGCTAGCTACAACGA TGATAGCG	14397
6092	AUCAGCCG A UUCAUCCA	5649	TGGATGAA GGCTAGCTACAACGA CGGCTGAT	14398

6088	GCCGAUUC A UCCACUGC	5650	GCAGTGGA GGCTAGCTACAACGA GAATCGGC	14399
6084	AUUCAUCC A CUGCACAG	5651	CTGTGCAG GGCTAGCTACAACGA GGATGAAT	14400
6081	CAUCCACU G CACAGCGC	5652	GCGCTGTG GGCTAGCTACAACGA AGTGGATG	14401
6079	UCCACUGC A CAGCGCCC	5653	GGGCGCTG GGCTAGCTACAACGA GCAGTGGA	14402
6076	ACUGCACA G CGCCUCU	5654	AGAGGGCG GGCTAGCTACAACGA TGTGCAGT	14403
6074	UGCACAGC G CCCUCUCC	5655	GGAGAGGG GGCTAGCTACAACGA GCTGTGCA	14404
6062	UCUCCUGG G CCCACAUG	5656	CATGTGGG GGCTAGCTACAACGA CCAGGAGA	14405
6058	CUGGGCCC A CAUGCCGA	5657	TCGGCATG GGCTAGCTACAACGA GGGCCCAG	14406
6056	GGGGCCAC A UGCGGACG	5658	CGTCGGCA GGCTAGCTACAACGA GTGGGCCC	14407
6054	GCCCAU G CCGACGCA	5659	TGCGTCGG GGCTAGCTACAACGA ATGTGGGC	14408
6050	ACAUGCCG A CGCAGUAU	5660	ATACTGCG GGCTAGCTACAACGA CGGCATGT	14409
6048	AUGCCGAC G CAGUAUCG	5661	CGATACTG GGCTAGCTACAACGA GTCGGCAT	14410
6045	CCGACGCA G UAUCCUG	5662	CAGCGATA GGCTAGCTACAACGA TGCCTCGG	14411
6043	GACGCAGU A UCGCUGCG	5663	CGCAGCGA GGCTAGCTACAACGA ACTGCGTC	14412
6040	GCAGUAUC G CUGCGCAC	5664	GTGCGCAG GGCTAGCTACAACGA GATACTGC	14413
6037	GUAUCGCU G CGCACACC	5665	GGTGTGCG GGCTAGCTACAACGA AGCGATAC	14414
6035	AUCGCUGC G CACACCAC	5666	GTGGTGTG GGCTAGCTACAACGA GCAGCGAT	14415
6033	CGCUGCGC A CACCACCC	5667	GGGTGGTG GGCTAGCTACAACGA GCGCAGCG	14416
6031	CUGCGCAC A CCACCCCG	5668	CGGGGTGG GGCTAGCTACAACGA GTGCGCAG	14417
6028	CGCACACC A CCCCAGCG	5669	CGTCGGGG GGCTAGCTACAACGA GGTGTGCG	14418
6022	CCACCCCG A CGACCAGG	5670	CCTGGTCG GGCTAGCTACAACGA CGGGGTGG	14419
6019	CCCCGACG A CCAGGGCG	5671	CGCCCTGG GGCTAGCTACAACGA CGTCGGGG	14420
6013	CGACCAGG G CGCCAGGA	5672	TCCTGGCG GGCTAGCTACAACGA CCTGGTCG	14421
6011	ACCAGGGC G CCAGGAGA	5673	TCTCCTGG GGCTAGCTACAACGA GCCCTGGT	14422
5998	GAGAGAGG A UGGCAGGG	5674	CCCTGCCA GGCTAGCTACAACGA CCTCTCTC	14423
5995	AGAGGAUG G CAGGGAGU	5675	ACTCCCTG GGCTAGCTACAACGA CATCTCT	14424
5988	GGCAGGGA G UAAGUUGA	5676	TCAACTTA GGCTAGCTACAACGA TCCTGCC	14425
5984	GGGAGUAA G UUGACCAG	5677	CTGGTCAA GGCTAGCTACAACGA TTACTCCC	14426
5980	GUAAGUUG A CCAGGUCC	5678	GTGGTCAA GGCTAGCTACAACGA CAACTTAC	14427
5975	UUGACCAG G UCCUCGGU	5679	ACCGAGGA GGCTAGCTACAACGA TGCTCAA	14428
5968	GGUCCUCG G UAGAAGGC	5680	GCCTTCTA GGCTAGCTACAACGA CGAGGACC	14429
5961	GGUAGAAG G CAUCUCCC	5681	GGGAGATG GGCTAGCTACAACGA CTTCTACC	14430
5959	UAGAAGGC A UCUCCCCG	5682	CGGGGAGA GGCTAGCTACAACGA GCCTTCTA	14431
5951	AUCUCCCC G CUCAUGAC	5683	GTCATGAG GGCTAGCTACAACGA GGGGAGAT	14432
5947	CCCCGCUC A UGACCUUG	5684	CAAGGTCA GGCTAGCTACAACGA GAGCGGGG	14433
5944	CGCUCAUG A CCUUGAAG	5685	TCTCAAGG GGCTAGCTACAACGA CATGAGCG	14434
5935	CCUUGAAG G CCACGAGA	5686	TCTCAGGG GGCTAGCTACAACGA CTTCAAGG	14435
5932	UGAAGGCC A CGAGAGCA	5687	TGCTCTCG GGCTAGCTACAACGA GGCCTTCA	14436
5926	CCACGAGA G CACCCGCC	5688	GGCGGGTG GGCTAGCTACAACGA TCTCGTGG	14437
5924	ACGAGAGC A CCGCCAC	5689	GTGGCGGG GGCTAGCTACAACGA GCTCTCGT	14438
5920	GAGCACCC G CCACUCCU	5690	AGGAGTGG GGCTAGCTACAACGA GGGTGCTC	14439
5917	CACCCGCC A CUCCUGCU	5691	AGCAGGAG GGCTAGCTACAACGA GCGGGGTG	14440
5911	CCACUCCU G CUCCAUG	5692	CTATGGAG GGCTAGCTACAACGA AGGAGTGG	14441
5906	CCUGCUCC A UAGCCCGC	5693	GCGGGCTA GGCTAGCTACAACGA GGAGCAGG	14442
5903	GCUCCAUA G CCGCCAG	5694	CTGGCGGG GGCTAGCTACAACGA TATGGAGC	14443
5899	CAUAGCCC G CCAGAAUG	5695	CATTCTGG GGCTAGCTACAACGA GGGCTATG	14444
5893	CCGCCAGA A UGUUACA	5696	TGTAGACA GGCTAGCTACAACGA TCTGGCGG	14445
5891	GCCAGAAU G UCUACAAG	5697	CTTGTAGA GGCTAGCTACAACGA ATTCTGGC	14446
5887	GAAUGUCU A CAAGCACC	5698	GGTGTCTG GGCTAGCTACAACGA AGACATTC	14447
5883	GUCUACAA G CACCUUCC	5699	GGAAGGTG GGCTAGCTACAACGA TTGTAGAC	14448
5881	CUACAAGC A CCUCCCCA	5700	TGGGAAGG GGCTAGCTACAACGA GCTTGTAG	14449
5870	UUCCCAAG G CCUAUGCU	5701	AGCATAGG GGCTAGCTACAACGA CTTGGGAA	14450
5866	CAAGGCCU A UGCUGCCA	5702	TGGCAGCA GGCTAGCTACAACGA AGGCCTTG	14451
5864	AGGCCUAU G CUGCCAAC	5703	GTTGGCAG GGCTAGCTACAACGA ATAGGCCT	14452
5861	CCUAUGCU G CCAACAGC	5704	GCTGTTGG GGCTAGCTACAACGA AGCATAGG	14453
5857	UGCUGCCA A CAGCCGCG	5705	CGCGGCTG GGCTAGCTACAACGA TGGCAGCA	14454

5854	UGCCAACA G CCGCGCCA	5706	TGGCGCGG GGCTAGCTACAACGA TGTTGGCA	14455
5851	CAACAGCC G CGCCAGCG	5707	CGCTGGCG GGCTAGCTACAACGA GGCTGTTG	14456
5849	ACAGCCGC G CCAGCGAU	5708	ATCGCTGG GGCTAGCTACAACGA GCGGCTGT	14457
5845	CCGCGCCA G CGAUGCCG	5709	CGGCATCG GGCTAGCTACAACGA TGGCGCGG	14458
5842	CGCCAGCG A UGCCGGCG	5710	CGCCGGCA GGCTAGCTACAACGA CGCTGGCG	14459
5840	CCAGCGAU G CCGCGGCC	5711	GGCGCCGG GGCTAGCTACAACGA ATCGCTGG	14460
5836	CGAUGCCG G CGCCACG	5712	CGTGGGCG GGCTAGCTACAACGA CCGCATCG	14461
5834	AUGCCGGC G CCCACGAA	5713	TTCGTGGG GGCTAGCTACAACGA GCCGGCAT	14462
5830	CGGCGCCC A CGAAGGCC	5714	GGCCTTCG GGCTAGCTACAACGA GGGCGCCG	14463
5824	CCACGAAG G CCGAAACG	5715	CGTTTCGG GGCTAGCTACAACGA CTTCGTGG	14464
5818	AGGCCGAA A CGGCUCUG	5716	CAGAGCCG GGCTAGCTACAACGA TTCGGCCT	14465
5815	CCGAAACG G CUCUGGGG	5717	CCCCAGAG GGCTAGCTACAACGA CGTTTCGG	14466
5803	UGGGGGGA G CGAGUUGG	5718	CCAACTCG GGCTAGCTACAACGA TCCCCCA	14467
5799	GGGAGCGA G UUGGGCGG	5719	CCGCCCAA GGCTAGCTACAACGA TCGCTCCC	14468
5794	CGAGUUGG G CGGCCACC	5720	GGTGGCCG GGCTAGCTACAACGA CCAACTCG	14469
5791	GUUGGGCG G CCACCCAC	5721	GTGGGTGG GGCTAGCTACAACGA CGCCCAAC	14470
5788	GGGCGGCC A CCCACCCU	5722	AGGGTGGG GGCTAGCTACAACGA GGCCGCC	14471
5784	GGCCACCC A CCCUCCA	5723	TGGGAGGG GGCTAGCTACAACGA GGGTGGCC	14472
5773	CUCCCAAG A UGUUGAAC	5724	GTTCAACA GGCTAGCTACAACGA CTTGGGAG	14473
5771	CCCAAGAU G UUGAACAG	5725	CTGTTCAA GGCTAGCTACAACGA ATCTGGG	14474
5766	GAUGUUGA A CAGGAGGG	5726	CCCTCCTG GGCTAGCTACAACGA TCAACATC	14475
5758	ACAGGAGG G UGCUUUGG	5727	CCAAAGCA GGCTAGCTACAACGA CCTCCTGT	14476
5756	AGGAGGGU G CUUUGGGU	5728	ACCCAAAG GGCTAGCTACAACGA ACCCTCCT	14477
5749	UGCUUUGG G UGGUGAGC	5729	GCTCACCA GGCTAGCTACAACGA CCAAAGCA	14478
5746	UUUGGGUG G UGAGCGGG	5730	CCCGCTCA GGCTAGCTACAACGA CACCCAAA	14479
5742	GGUGGUGA G CGGGCUGG	5731	CCAGCCCG GGCTAGCTACAACGA TCACCACC	14480
5738	GUGAGCGG G CUGGUGAU	5732	ATCACCAG GGCTAGCTACAACGA CCGCTCAC	14481
5734	GCGGGCUG G UGAUGGAG	5733	CTCCATCA GGCTAGCTACAACGA CAGCCCGC	14482
5731	GGCUGGUG A UGGAGGCU	5734	AGCCTCCA GGCTAGCTACAACGA CACCAGCC	14483
5725	UGAUGGAG G CUGUGAAU	5735	ATTACAGG GGCTAGCTACAACGA CTCCATCA	14484
5722	UGGAGGCU G UGAAUGCC	5736	GGCATTCA GGCTAGCTACAACGA AGCCTCCA	14485
5718	GGCUGUGA A UGCCAUCA	5737	TGATGGCA GGCTAGCTACAACGA TCACAGCC	14486
5716	CUGUGAAU G CCAUCAAU	5738	ATTGATGG GGCTAGCTACAACGA ATTACAG	14487
5713	UGAAUGCC A UCAAUGAU	5739	ATCATTGA GGCTAGCTACAACGA GGCATTCA	14488
5709	UGCCAUCA A UGAUGCUA	5740	TAGCATCA GGCTAGCTACAACGA TGATGGCA	14489
5706	CAUCAAUG A UGCUAUCG	5741	CGATAGCA GGCTAGCTACAACGA CATTGATG	14490
5704	UCAAUGAU G CUAUCGCG	5742	CGCGATAG GGCTAGCTACAACGA ATCATTTGA	14491
5701	AUGAUGCU A UCGCGGGG	5743	CCCCGCGA GGCTAGCTACAACGA AGCATCAT	14492
5698	AUGCUAUC G CGGGGUUC	5744	GAACCCCG GGCTAGCTACAACGA GATAGCAT	14493
5693	AUCGCGGG G UUCCAGG	5745	CCTGGGAA GGCTAGCTACAACGA CCCGCGAT	14494
5685	GUUCCAG G CAGAGUGG	5746	CCACTCTG GGCTAGCTACAACGA CTGGGAAC	14495
5680	CAGGCAGA G UGGACAAG	5747	CTTGTTCA GGCTAGCTACAACGA TCTGCCTG	14496
5676	CAGAGUGG A CAAGCCUG	5748	CAGGCTTG GGCTAGCTACAACGA CCACTCTG	14497
5672	GUGGACAA G CCUGCUAG	5749	CTAGCAGG GGCTAGCTACAACGA TTGTCCAC	14498
5668	ACAAGCCU G CUAGGUAC	5750	GTACCTAG GGCTAGCTACAACGA AGGCTTGT	14499
5663	CCUGCUAG G UACUGUAU	5751	ATACAGTA GGCTAGCTACAACGA CTAGCAGG	14500
5661	UGCUGAGU A CUGUAUCC	5752	GGATACAG GGCTAGCTACAACGA ACCTAGCA	14501
5658	UAGGUACU G UAUCCCGC	5753	GCGGGATA GGCTAGCTACAACGA AGTACCTA	14502
5656	GGUACUGU A UCCCGCUG	5754	CAGCGGGA GGCTAGCTACAACGA ACAGTACC	14503
5651	UGUAUCCC G CUGAUGAA	5755	TTCATCAG GGCTAGCTACAACGA GGGATACA	14504
5647	UCCCGCUG A UGAAAUUC	5756	GAATTTCA GGCTAGCTACAACGA CAGCGGGA	14505
5642	CUGAUGAA A UUCCACAU	5757	ATGTGGAA GGCTAGCTACAACGA TTCATCAG	14506
5637	GAAAUUCC A CAUGUCU	5758	AGCACATG GGCTAGCTACAACGA GGAATTTT	14507
5635	AAUUCCAC A UGUGCUUC	5759	GAAGCACA GGCTAGCTACAACGA GTGGAATT	14508
5633	UUCCACAU G UGCUUCGC	5760	GCGAAGCA GGCTAGCTACAACGA ATGTGGAA	14509
5631	CCACAUGU G CUUCGCCC	5761	GGGCGAAG GGCTAGCTACAACGA ACATGTGG	14510

5626	UGUGCUUC G CCCAGAAA	5762	TTTCTGGG GGCTAGCTACAACGA GAAGCACA	14511
5617	CCCAGAAA G CCUCAAGG	5763	CCTTGAGG GGCTAGCTACAACGA TTTCTGGG	14512
5608	CCUCAAGG G CUCGCCAC	5764	GTGGCGAG GGCTAGCTACAACGA CCTTGAGG	14513
5604	AAGGGCUC G CCACUUGG	5765	CCAAGTGG GGCTAGCTACAACGA GAGCCCTT	14514
5601	GGCUCGCC A CUUGGAUU	5766	AATCCAAG GGCTAGCTACAACGA GGCGAGCC	14515
5595	CCACUUGG A UUCCACCA	5767	TGGTGGAA GGCTAGCTACAACGA CCAAGTGG	14516
5590	UGGAUUC A CCACGGGA	5768	TCCCGTGG GGCTAGCTACAACGA GGAATCCA	14517
5587	AUUCACC A CGGGAGCA	5769	TGCTCCCG GGCTAGCTACAACGA GGTGGAAT	14518
5581	CCACGGGA G CAGCAGCC	5770	GGCTGCTG GGCTAGCTACAACGA TCCCGTGG	14519
5578	CGGGAGCA G CAGCCUCC	5771	GGAGGCTG GGCTAGCTACAACGA TGCTCCCG	14520
5575	GAGCAGCA G CCUCCGCU	5772	AGCGGAGG GGCTAGCTACAACGA TGCTGCTC	14521
5569	CAGCCUCC G CUUGGUUG	5773	CAACCAAG GGCTAGCTACAACGA GGAGGCTG	14522
5564	UCCGCUUG G UUGGUGGC	5774	GCCACCAA GGCTAGCTACAACGA CAAGCGGA	14523
5560	CUUGGUUG G UGGCUGUU	5775	AACAGCCA GGCTAGCTACAACGA CAACCAAG	14524
5557	GGUUGGUG G CUGUUUGC	5776	GCAAACAG GGCTAGCTACAACGA CACCAACC	14525
5554	UGGUGGCU G UUUGCAGC	5777	GCTGCAAA GGCTAGCTACAACGA AGCCACCA	14526
5550	GGCUGUUU G CAGCAAUC	5778	GATTGCTG GGCTAGCTACAACGA AAACAGCC	14527
5547	UGUUUGCA G CAUCCGA	5779	TCGGATTG GGCTAGCTACAACGA TGCAAACA	14528
5544	UUGCAGCA A UCCGAGCG	5780	CGCTCGGA GGCTAGCTACAACGA TGCTGCAA	14529
5538	CAAUCCGA G CGCCUUCU	5781	AGAAGGCG GGCTAGCTACAACGA TCGGATTG	14530
5536	AUCCGAGC G CCUUCUGC	5782	GCAGAGGG GGCTAGCTACAACGA GCTCGGAT	14531
5529	CGCCUUCU G CUUGAACU	5783	AGTTCAAG GGCTAGCTACAACGA AGAAGGCG	14532
5523	CUGCUUGA A CUGCUCGG	5784	CCGAGCAG GGCTAGCTACAACGA TCAAGCAG	14533
5520	CUUGAACU G CUCGGCGA	5785	TCGCCGAG GGCTAGCTACAACGA AGTTCAAG	14534
5515	ACUGCUCG G CGAGCUGC	5786	GCAGCTCG GGCTAGCTACAACGA CGAGCAGT	14535
5511	CUCGGCGA G CUGCAUCC	5787	GGATGCAG GGCTAGCTACAACGA TCGCCGAG	14536
5508	GGCAGGCU G CAUCCCU	5788	AGGGGATG GGCTAGCTACAACGA AGCTCGCC	14537
5506	CGAGCUGC A UCCCCUGU	5789	ACAGGGGA GGCTAGCTACAACGA GCAGCTCG	14538
5499	CAUCCCUU G UUCGAUGU	5790	ACATCGAA GGCTAGCTACAACGA AGGGGATG	14539
5494	CCUGUUCG A UGUAAGGG	5791	CCCTTACA GGCTAGCTACAACGA CGAACAGG	14540
5492	UGUUCGAU G UAAGGGAG	5792	CTCCCTTA GGCTAGCTACAACGA ATCGAACA	14541
5483	UAAGGGAG G UGUGAGGC	5793	GCCTCACA GGCTAGCTACAACGA CTCCCTTA	14542
5481	AGGGAGGU G UGAGGCAC	5794	GTGCCTCA GGCTAGCTACAACGA ACCTCCCT	14543
5476	GGUGUGAG G CACACUCC	5795	GGAGTGTG GGCTAGCTACAACGA CTCACACC	14544
5474	UGUGAGGC A CACUCCUC	5796	GAGGAGTG GGCTAGCTACAACGA GCCTCACA	14545
5472	UGAGGCAC A CUCCUCCA	5797	TGGAGGAG GGCTAGCTACAACGA GTGCCTCA	14546
5464	ACUCCUCC A UCUCAUCC	5798	CGATGAGA GGCTAGCTACAACGA GGAGGAGT	14547
5459	UCCAUCUC A UCGAACUC	5799	GAGTTCGA GGCTAGCTACAACGA GAGATGGA	14548
5454	CUCAUCGA A CUCCUGGU	5800	ACCAGGAG GGCTAGCTACAACGA TCGATGAG	14549
5447	AACUCCUG G UAGAGAGC	5801	GCTCTCTA GGCTAGCTACAACGA CAGGAGTT	14550
5440	GGUAGAGA G CCUCCUG	5802	CAGGGAGG GGCTAGCTACAACGA TCTCTACC	14551
5432	GCCUCCCU G UCGGGGAU	5803	ATCCCCGA GGCTAGCTACAACGA AGGGAGGC	14552
5425	UGUCGGGG A UAACAGCC	5804	GGCTGTTA GGCTAGCTACAACGA CCCCAGCA	14553
5422	CGGGGAUA A CAGCCGCG	5805	GCCGGCTG GGCTAGCTACAACGA TATCCCCG	14554
5419	GGUAACA G CCGGCUUC	5806	GAAGCCGG GGCTAGCTACAACGA TGTATCC	14555
5415	AACAGCCG G CUUCCCGG	5807	CCGGGAAG GGCTAGCTACAACGA CGGCTGTT	14556
5406	CUUCCCGG A CAAGAUGA	5808	TCATCTTG GGCTAGCTACAACGA CCGGGAAG	14557
5401	CGGACAAG A UGAUUCUG	5809	CAGAATCA GGCTAGCTACAACGA CTTGTCCG	14558
5398	ACAAGAUG A UUCUGCCC	5810	GGGCAGAA GGCTAGCTACAACGA CATCTTGT	14559
5393	AUGAUUCU G CCCACAAU	5811	ATTGTGGG GGCTAGCTACAACGA AGAATCAT	14560
5389	UUCUGGCC A CAUAGACC	5812	GGTCAATT GGCTAGCTACAACGA GGGCAGAA	14561
5386	UGCCACAA A UGACCAG	5813	CGTGCTCA GGCTAGCTACAACGA TGTGGGCA	14562
5383	CCACAAUG A CCACGCUG	5814	CAGCGTGG GGCTAGCTACAACGA CATTGTGG	14563
5380	CAUAGACC A CGCUGCCU	5815	AGGCAGCG GGCTAGCTACAACGA GGTCATTG	14564
5378	AUGACCAC G CUGCCUGU	5816	ACAGGCAG GGCTAGCTACAACGA GTGGTCAT	14565
5375	ACCACGCU G CCUGUCGU	5817	ACGACAGG GGCTAGCTACAACGA AGCGTGGT	14566

5371	CGCUGCCU G UCGUCAGG	5818	CCTGACGA GGCTAGCTACAACGA AGGCAGCG	14567
5368	UGCCUGUC G UCAGGCAA	5819	TTGCCTGA GGCTAGCTACAACGA GACAGGCA	14568
5363	GUCGUCAG G CAAUACGC	5820	GCGTATTG GGCTAGCTACAACGA CTGACGAC	14569
5360	GUCAGGCA A UACGCGU	5821	ACCGCGTA GGCTAGCTACAACGA TGCCTGAC	14570
5358	CAGGCAAU A CGCGGUCA	5822	TGACCGCG GGCTAGCTACAACGA ATTGCCTG	14571
5356	GGCAAUAC G CGGUCAGA	5823	TCTGACCG GGCTAGCTACAACGA GTATTGCC	14572
5353	AAUACGCG G UCAGAGCU	5824	AGCTCTGA GGCTAGCTACAACGA CGCGTATT	14573
5347	CGGUCAGA G CUGCCAGG	5825	CCTGGCAG GGCTAGCTACAACGA TCTGACCG	14574
5344	UCAGAGCU G CCAGGACG	5826	CGTCCTGG GGCTAGCTACAACGA AGCTCTGA	14575
5338	CUGCCAGG A CGCCACCU	5827	AGGTGGCG GGCTAGCTACAACGA CCTGGCAG	14576
5336	GCCAGGAC G CCACCUAC	5828	GTAGGTGG GGCTAGCTACAACGA GTCCTGGC	14577
5333	AGGACGCC A CCUACUAG	5829	CTAGTAGG GGCTAGCTACAACGA GCGTCTCT	14578
5329	CGCCACCU A CUAGCACC	5830	GGTGCTAG GGCTAGCTACAACGA AGGTGGCG	14579
5325	ACCUACUA G CACCCAGG	5831	CCTGGGTG GGCTAGCTACAACGA TAGTAGGT	14580
5323	CUACUAGC A CCCAGGUG	5832	CACCTGGG GGCTAGCTACAACGA GCTAGTAG	14581
5317	GCACCCAG G UGUGGUG	5833	CACCAGCA GGCTAGCTACAACGA CTGGGTGC	14582
5315	ACCCAGGU G CUGGUGAC	5834	GTCACCAG GGCTAGCTACAACGA ACCTGGGT	14583
5311	AGGUGCUG G UGACGACC	5835	GGTCGTCA GGCTAGCTACAACGA CAGCACCT	14584
5308	UGCUGGUG A CGACCUCC	5836	GGAGGTCT GGCTAGCTACAACGA CACCAGCA	14585
5305	UGGUGACG A CCUCCAGG	5837	CCTGGAGG GGCTAGCTACAACGA CGTCACCA	14586
5297	ACCUCCAG G UCAGCCGA	5838	TCGGCTGA GGCTAGCTACAACGA CTGGAGGT	14587
5293	CCAGGUCA G CCGACAUG	5839	CATGTCTG GGCTAGCTACAACGA TGACCTGG	14588
5289	GUACGCCG A CAUGCAUG	5840	CATGCATG GGCTAGCTACAACGA CGGCTGAC	14589
5287	CAGCCGAC A UGCAUGUC	5841	GACATGCA GGCTAGCTACAACGA GTCGGCTG	14590
5285	GCCGACAU G CAUGUCAU	5842	ATGACATG GGCTAGCTACAACGA ATGTCTGG	14591
5283	CGACAUGC A UGUCAUGA	5843	TCATGACA GGCTAGCTACAACGA GCATGTCTG	14592
5281	ACAUGCAU G UCAUGAUG	5844	CATCATGA GGCTAGCTACAACGA ATGCATGT	14593
5278	UGCAUGUC A UGAUGUAU	5845	ATACATCA GGCTAGCTACAACGA GACATGCA	14594
5275	AUGUCAUG A UGUUUUG	5846	CAAATACA GGCTAGCTACAACGA CATGACAT	14595
5273	GUCAUGAU G UAUUUGU	5847	ACCAAATA GGCTAGCTACAACGA ATCATGAC	14596
5271	CAUGAUGU A UUUUGGUA	5848	TAACCAAA GGCTAGCTACAACGA ACATCATG	14597
5266	UGUAUUUG G UUAUGGGG	5849	CCCCATAA GGCTAGCTACAACGA CAAATACA	14598
5263	AUUUUGGU A UGGGGUGU	5850	ACACCCCA GGCTAGCTACAACGA AACCAAT	14599
5258	GUUAUGGG G UGUGUGAG	5851	CTCACACA GGCTAGCTACAACGA CCCATAAC	14600
5256	UAUGGGGU G UGUGAGGG	5852	CCCTCACA GGCTAGCTACAACGA ACCCCATA	14601
5254	UGGGGUGU G UGAGGGUG	5853	CACCCCTA GGCTAGCTACAACGA ACACCCCA	14602
5248	GUGUGAGG G UGACAUCA	5854	TGATGTCA GGCTAGCTACAACGA CCTCACAC	14603
5245	UGAGGUG G CAUCAUUU	5855	AAATGATG GGCTAGCTACAACGA CACCCCTA	14604
5243	AGGGUGAC A UCAUUUG	5856	CAAAATGA GGCTAGCTACAACGA GTACCCCT	14605
5240	GUGACAUC A UUUUGGAC	5857	GTCCAAAA GGCTAGCTACAACGA GATGTCAC	14606
5233	CAUUUUGG A CGGCUCCU	5858	AGGAGCCG GGCTAGCTACAACGA CCAAAATG	14607
5230	UUUGGACG G CUCCUAGC	5859	GCTAGGAG GGCTAGCTACAACGA CGTCCAAA	14608
5223	GGCUCCUA G CCUAUACA	5860	TGTATAGG GGCTAGCTACAACGA TAGGAGCC	14609
5219	CCUAGCCU A UACAGCAG	5861	CTGCTGTA GGCTAGCTACAACGA AGGCTAGG	14610
5217	UAGCCUAU A CAGCAGGG	5862	CCCTGCTG GGCTAGCTACAACGA ATAGGCTA	14611
5214	CCUAUACA G CAGGGGUG	5863	CACCCCTG GGCTAGCTACAACGA TGTATAGG	14612
5208	CAGCAGGG G UGUUGGCC	5864	GGCCAACA GGCTAGCTACAACGA CCTGTCTG	14613
5206	GCAGGGGU G UUGGCCCG	5865	CGGGCCAA GGCTAGCTACAACGA ACCCTGTC	14614
5202	GGGUGUUG G CCCGUGUA	5866	TACACGGG GGCTAGCTACAACGA CAACACCC	14615
5198	GUUGGCCC G UGUAGCGU	5867	ACGCTACA GGCTAGCTACAACGA GGGCCAAC	14616
5196	UGGCCCCG U UAGCGUAG	5868	CTACGCTA GGCTAGCTACAACGA ACGGGCCA	14617
5193	CCCGUGUA G CGUAGGCU	5869	AGCCTACG GGCTAGCTACAACGA TACACGGG	14618
5191	CGUGUAGC G UAGGCUUU	5870	AAAGCCTA GGCTAGCTACAACGA GCTACACG	14619
5187	UAGCGUAG G CUUAGGCC	5871	GGCTAAAG GGCTAGCTACAACGA CTACGCTA	14620
5181	AGGCUUUA G CCGUGUGA	5872	TCACACGG GGCTAGCTACAACGA TAAAGCCT	14621
5178	CUUAGGCC G UGUGAGAC	5873	GTCTCACA GGCTAGCTACAACGA GGCTAAAG	14622



5176	UUAGCCGU G UGAGACAC	5874	GTGTCTCA GGCTAGCTACAACGA ACGGCTAA	14623
5171	CGUGUGAG A CACUCCA	5875	TGGAAGTG GGCTAGCTACAACGA CTCACACG	14624
5169	UGUGAGAC A CUUCCACA	5876	TGTGGAAG GGCTAGCTACAACGA GTCTCACA	14625
5163	ACACUUC A CAUUUAU	5877	ATCAAATG GGCTAGCTACAACGA GGAAGTGT	14626
5161	ACUUCCAC A UUUGAUCC	5878	GGATCAAA GGCTAGCTACAACGA GTGGAAGT	14627
5156	CACAUUUG A UCCACGA	5879	TCGTGGGA GGCTAGCTACAACGA CAAATGTG	14628
5151	UUGAUCCC A CGAUGGGG	5880	CCCCATCG GGCTAGCTACAACGA GGGATCAA	14629
5148	AUCCACAG A UGGGGGUG	5881	CACCCCA GGCTAGCTACAACGA CGTGGGAT	14630
5142	CGAUGGGG G UGGAGCCU	5882	AGGCTCCA GGCTAGCTACAACGA CCCATCG	14631
5137	GGGUGGA G CCUGAGCC	5883	GGCTCAGG GGCTAGCTACAACGA TCCACCCC	14632
5131	GAGCCUGA G CCCUGGCG	5884	CGCCAGGG GGCTAGCTACAACGA TCAGGCTC	14633
5125	GAGCCUG G CGCACACU	5885	AGTGTGCG GGCTAGCTACAACGA CAGGGCTC	14634
5123	GCCUGGC G CACACUGU	5886	ACAGTGTG GGCTAGCTACAACGA GCCAGGGC	14635
5121	CCUGGCGC A CACUGUGG	5887	CCACAGTG GGCTAGCTACAACGA GCGCCAGG	14636
5119	UGGCGCAC A CUGUGGCU	5888	AGCCACAG GGCTAGCTACAACGA GTGCGCCA	14637
5116	CGCACACU G UGGCUUGG	5889	CCAAGCCA GGCTAGCTACAACGA AGTGTGCG	14638
5113	ACACUGUG G CUUGGUU	5890	ATACCAAG GGCTAGCTACAACGA CACAGTGT	14639
5108	GUGGCUUG G UAUGCUAC	5891	GTAGCATA GGCTAGCTACAACGA CAAGCCAC	14640
5106	GGCUUGGU A UGCUACCA	5892	TGTAGCA GGCTAGCTACAACGA ACCAAGCC	14641
5104	CUUGGUU G CUACCAGG	5893	CCTGGTAG GGCTAGCTACAACGA ATACCAAG	14642
5101	GGUAUGCU A CCAGGUAG	5894	CTACCTGG GGCTAGCTACAACGA AGCATACC	14643
5096	GCUACCAG G UAGGGGAG	5895	CTCCCCTA GGCTAGCTACAACGA CTGGTAGC	14644
5087	UAGGGGAG G UUUUCUCC	5896	GGAGAAAA GGCTAGCTACAACGA CTCCCCTA	14645
5077	UUUCUCCU G CCUGCUUG	5897	CAAGCAGG GGCTAGCTACAACGA AGGAGAAA	14646
5073	UCCUGCCU G CUUGGUCU	5898	AGACCAAG GGCTAGCTACAACGA AGGCAGGA	14647
5068	CCUGCUUG G UCUGGGAC	5899	GTCCCAGA GGCTAGCTACAACGA CAAGCAGG	14648
5061	GGUCUGGG A CAAGAAGU	5900	ACTTCTTG GGCTAGCTACAACGA CCCAGACC	14649
5054	GACAAGAA G UGGGCAUC	5901	GATGCCCA GGCTAGCTACAACGA TTCTTGTC	14650
5050	AGAAGUGG G CAUCUAUG	5902	CATAGATG GGCTAGCTACAACGA CACTTCT	14651
5048	AAGUGGGC A UCUAUGUG	5903	CACATAGA GGCTAGCTACAACGA GCCCACTT	14652
5044	GGGCAUCU A UGUGGGUG	5904	CACCCACA GGCTAGCTACAACGA AGATGCC	14653
5042	GCAUCUAU G UGGGUGAG	5905	CTCACCCA GGCTAGCTACAACGA ATAGATGC	14654
5038	CUAUGUGG G UGAGGCCU	5906	AGGCCTCA GGCTAGCTACAACGA CCACATAG	14655
5033	UGGGUGAG G CCUGUGAA	5907	TTCACAGG GGCTAGCTACAACGA CTCACCCA	14656
5029	UGAGGCCU G UGAAGACA	5908	TGTCTTCA GGCTAGCTACAACGA AGGCCTCA	14657
5023	CUGUGAAG A CACCCUCC	5909	GGAGGTTG GGCTAGCTACAACGA CTTCACAG	14658
5021	GUGAAGAC A CCCUCCCA	5910	TGGGAGGG GGCTAGCTACAACGA GTCTTCAC	14659
5010	CUCCCAGA A CUCCAGAU	5911	ATCTGGAG GGCTAGCTACAACGA TCTGGGAG	14660
5003	AACUCCAG A UGUUCCUG	5912	CAGGACCA GGCTAGCTACAACGA CTGGAGTT	14661
5000	UCCAGAUG G UCCUGGCA	5913	TGCCAGGA GGCTAGCTACAACGA CATCTGGA	14662
4994	UGGUCCUG G CAGAAGGG	5914	CCCTTCTG GGCTAGCTACAACGA CAGGACCA	14663
4986	GCAGAAGG G CAACCCUG	5915	CAGGGTTG GGCTAGCTACAACGA CCTTCTGC	14664
4983	GAAGGGCA A CCCUGGUG	5916	CACCAGGG GGCTAGCTACAACGA TGCCCTTC	14665
4977	CAACCCUG G UGUUUUA	5917	TAAATACA GGCTAGCTACAACGA CAGGGTTG	14666
4975	ACCCUGGU G UAUUUAGG	5918	CCTAAATA GGCTAGCTACAACGA ACCAGGTT	14667
4973	CCUGGUGU A UUUAGGUA	5919	TACCTAAA GGCTAGCTACAACGA ACACCAGG	14668
4967	GUUUUAG G UAAGCCCG	5920	CGGGCTTA GGCTAGCTACAACGA CTAAATAC	14669
4963	UUAGGUAA G CCCGCAAC	5921	GTTGCGGG GGCTAGCTACAACGA TTACCTAA	14670
4959	GUAAGCCC G CAACCUAA	5922	TTAGGTTG GGCTAGCTACAACGA GGGCTTAC	14671
4956	AGCCCGCA A CCUAACGG	5923	CCGTTAGG GGCTAGCTACAACGA TGCGGGCT	14672
4951	GCAACCUA A CGGAGGUC	5924	GACCTCCG GGCTAGCTACAACGA TAGGTTGC	14673
4945	UAACGGAG G UCUCGGCG	5925	CGCCGAGA GGCTAGCTACAACGA CTCCGTTA	14674
4939	AGGUCUCG G CGGGCGUG	5926	CACGCCCG GGCTAGCTACAACGA CGAGACCT	14675
4935	CUCGGCGG G CGUGAGCU	5927	AGCTCACG GGCTAGCTACAACGA CCGCCGAG	14676
4933	CGGCGGGC G UGAGCUCG	5928	CGAGCTCA GGCTAGCTACAACGA GCCCGCCG	14677
4929	GGGCGUGA G CUCGUACC	5929	GGTACGAG GGCTAGCTACAACGA TCACGCCC	14678



4925	GUGAGCUC G UACCAAGC	5930	GCTTGGTA GGCTAGCTACAACGA GAGCTCAC	14679
4923	GAGCUCGU A CCAAGCAC	5931	GTGCTTGG GGCTAGCTACAACGA ACGAGCTC	14680
4918	CGUACCAA G CACAUCCC	5932	GGGATGTG GGCTAGCTACAACGA TTGGTACG	14681
4916	UACCAAGC A CAUCCCGC	5933	GCGGGATG GGCTAGCTACAACGA GCTTGGTA	14682
4914	CCAAGCAC A UCCCGCGU	5934	ACGCGGGA GGCTAGCTACAACGA GTGCTTGG	14683
4909	CACAUCCC G CGUCAUAG	5935	CTATGACG GGCTAGCTACAACGA GGGATGTG	14684
4907	CAUCCCGC G UCAUAGCA	5936	TGCTATGA GGCTAGCTACAACGA GCGGGATG	14685
4904	CCCGCGUC A UAGCACUC	5937	GAGTGCTA GGCTAGCTACAACGA GACGCGGG	14686
4901	GCGUCAUA G CACUCACA	5938	TGTGAGTG GGCTAGCTACAACGA TATGACGC	14687
4899	GUCAUAGC A CUCACACA	5939	TGTGTGAG GGCTAGCTACAACGA GCTATGAC	14688
4895	UAGCACUC A CACAGGAC	5940	GTCCTGTG GGCTAGCTACAACGA GAGTGCTA	14689
4893	GCACUCAC A CAGGACCG	5941	CGGTCTGT GGCTAGCTACAACGA GTGATGTC	14690
4888	CACACAGG A CCGAGGAG	5942	CTCTCTGG GGCTAGCTACAACGA CCTGTGTG	14691
4880	ACCGAGGA G UCGAACAU	5943	ATGTTTGA GGCTAGCTACAACGA TCCTCGGT	14692
4875	GGAGUCGA A CAUGCCCG	5944	CGGGCATG GGCTAGCTACAACGA TCGACTCC	14693
4873	AGUCGAAC A UGCCCGAA	5945	TTCGGGCA GGCTAGCTACAACGA GTTCGACT	14694
4871	UCGAACAU G CCCGAAGG	5946	CCTTCGGG GGCTAGCTACAACGA ATGTTTGA	14695
4863	GCCCGAAG G CCGCUCUC	5947	GAGAGCGG GGCTAGCTACAACGA CTTCGGGG	14696
4860	CGAAGGCC G CUCUCCUG	5948	CAGGAGAG GGCTAGCTACAACGA GGCCTTCG	14697
4849	CUCCUGGA G UCACAAAC	5949	GTTTGTGA GGCTAGCTACAACGA TCCAGGAG	14698
4846	CUGGAGUC A CAAACCUG	5950	CAGGTTTG GGCTAGCTACAACGA GACTCCAG	14699
4842	AGUCACAA A CCUGUAUA	5951	TATACAGG GGCTAGCTACAACGA TTGTGACT	14700
4838	ACAAACCU G UAUUAGCC	5952	GGCATATA GGCTAGCTACAACGA AGGTTTGT	14701
4836	AAACCUGU A UAUUCCUC	5953	GAGGCATA GGCTAGCTACAACGA ACAGGTTT	14702
4834	ACCUGUAU A UGCCUCUC	5954	GAGAGGCA GGCTAGCTACAACGA ATACAGGT	14703
4832	CUGUAUUA G CCUCUCCU	5955	AGGAGAGG GGCTAGCTACAACGA ATATACAG	14704
4823	CCUCUCCU G CCCCUACC	5956	GGTAGGGG GGCTAGCTACAACGA AGGAGAGG	14705
4817	CUGCCCCU A CCGGUCCU	5957	AGGACCGG GGCTAGCTACAACGA AGGGGCGA	14706
4813	CCCUACCG G UCCUACCU	5958	AGGTAGGA GGCTAGCTACAACGA CGGTAGGG	14707
4808	CCGUCCU A CCUCGCCU	5959	AGGCGAGG GGCTAGCTACAACGA AGGACCGG	14708
4803	CCUACCUC G CCUCUGCG	5960	CGCAGAGG GGCTAGCTACAACGA GAGGTAGG	14709
4797	UCGCCUCU G CGAGCGGG	5961	CCCGCTCG GGCTAGCTACAACGA AGAGGCGA	14710
4793	CUCUGCGA G CGGGACAC	5962	GTGTCCCG GGCTAGCTACAACGA TCGCAGAG	14711
4788	CGAGCGGG A CACUGCGU	5963	ACGCAGTG GGCTAGCTACAACGA CCCGCTCG	14712
4786	AGCGGGAC A CUGCGUCU	5964	AGACGCAG GGCTAGCTACAACGA GTCCCGCT	14713
4783	GGGACACU G CGUCUUGG	5965	CCAAGACG GGCTAGCTACAACGA AGTGTCCC	14714
4781	GACACUGC G UCUUGGGG	5966	CCCCAAGA GGCTAGCTACAACGA GCAGTGTC	14715
4773	GUCUUGGG G CACGUGCG	5967	CGACCGTG GGCTAGCTACAACGA CCAAGAC	14716
4771	CUUGGGGC A CGGUCGUC	5968	GACGACCG GGCTAGCTACAACGA GCCCAAG	14717
4768	GGGGCACG G UCGUCGUC	5969	GACGACGA GGCTAGCTACAACGA CGTGCCCC	14718
4765	GCACGGUC G UCGUCUCA	5970	TGAGACGA GGCTAGCTACAACGA GACCGTGC	14719
4762	CGGUCGUC G UCUCAAUG	5971	CATTGAGA GGCTAGCTACAACGA GACGACCG	14720
4756	UCGUCUCA A UGGUGAAG	5972	CTTCACCA GGCTAGCTACAACGA TGAGACGA	14721
4753	UCUCAAUG G UGAAGGUA	5973	TACCTTCA GGCTAGCTACAACGA CATTGAGA	14722
4747	UGGUGAAG G UAGGGUCC	5974	GGACCTGA GGCTAGCTACAACGA CTTCACCA	14723
4742	AAGGUAGG G UCCAAGCU	5975	AGCTTGGA GGCTAGCTACAACGA CCTACCTT	14724
4736	GGGUCCAA G CUGAAGUC	5976	GACTTCAG GGCTAGCTACAACGA TTGGACCC	14725
4730	AAGCUGAA G UCGACUGU	5977	ACAGTCGA GGCTAGCTACAACGA TTCAGCTT	14726
4726	UGAAGUCG A CUGUUUGG	5978	CCAAACAG GGCTAGCTACAACGA CGACTTCA	14727
4723	AGUCGACU G UUUGGGUG	5979	CACCCAAA GGCTAGCTACAACGA AGTCGACT	14728
4717	CUGUUUGG G UGACACAU	5980	ATGTGTCA GGCTAGCTACAACGA CCAAACAG	14729
4714	UUUGGGUG A CACAUGUA	5981	TACATGTG GGCTAGCTACAACGA CACCCAAA	14730
4712	UGGGUGAC A CAUGUAUU	5982	AATACATG GGCTAGCTACAACGA GTACCCCA	14731
4710	GGUGACAC A UGUUUUAC	5983	GTAAATCA GGCTAGCTACAACGA GTGTACCC	14732
4708	UGACACAU G UAUUACAG	5984	CTGTAATA GGCTAGCTACAACGA ATGTGTCA	14733
4706	ACACAUGU A UUACAGUC	5985	GACTGTAA GGCTAGCTACAACGA ACATGTGT	14734

4703	CAUGUAUU A CAGUCGAU	5986	ATCGACTG GGCTAGCTACAACGA AATACATG	14735
4700	GUUUUACA G UCGAUCAC	5987	GTGATCGA GGCTAGCTACAACGA TGTAATAC	14736
4696	UACAGUCG A UCACCGAG	5988	CTCGGTGA GGCTAGCTACAACGA CGACTGTA	14737
4693	AGUCGAUC A CCGAGUCA	5989	TGACTCGG GGCTAGCTACAACGA GATCGACT	14738
4688	AUCACCGA G UCAAAAUC	5990	GATTTTGA GGCTAGCTACAACGA TCGGTGAT	14739
4682	GAGUCAA A UCGCCCGU	5991	ACCGGCCA GGCTAGCTACAACGA TTTGACTC	14740
4679	UCAAAAUC G CCGGUUAU	5992	TATACCGG GGCTAGCTACAACGA GATTTTGA	14741
4675	AAUCGCCG G UAUAGCCC	5993	GGGCTATA GGCTAGCTACAACGA CGGCGATT	14742
4673	UCGCCCGU A UAGCCCGU	5994	ACGGGCTA GGCTAGCTACAACGA ACCGGCGA	14743
4670	CCGGUUAU G CCCGUCAU	5995	ATGACGGG GGCTAGCTACAACGA TATACCGG	14744
4666	UAUAGCCC G UCAUUAGA	5996	TCTAATGA GGCTAGCTACAACGA GGGCTATA	14745
4663	AGCCCGUC A UUAGAGCG	5997	CGCTCTAA GGCTAGCTACAACGA GACGGGCT	14746
4657	UCAUUAGA G CGUCUGUU	5998	AACAGACG GGCTAGCTACAACGA TCTAATGA	14747
4655	AUUAGAGC G UCUGUUGC	5999	GCAACAGA GGCTAGCTACAACGA GCTCTAAT	14748
4651	GAGCGUCU G UUGCCACG	6000	CGTGGCAA GGCTAGCTACAACGA AGACGCTC	14749
4648	CGUCUGUU G CCACGACA	6001	TGTCGTGG GGCTAGCTACAACGA AACAGACG	14750
4645	CUGUUGCC A CGACAACG	6002	CGTTGTGG GGCTAGCTACAACGA GGCAACAG	14751
4642	UUGCCACG A CAACGACG	6003	CGTCGTTC GGCTAGCTACAACGA TGTGTCG	14752
4639	CCACGACA A CGACGUCC	6004	GGAGCTCG GGCTAGCTACAACGA TGTCGTGG	14753
4636	CGACAACG A CGUCCCCG	6005	CGGGGACG GGCTAGCTACAACGA CGTTGTTCG	14754
4634	ACAACGAC G UCCCCGU	6006	AGCGGGGA GGCTAGCTACAACGA GTCGTTGT	14755
4628	ACGUCCCC G CUGGCCGG	6007	CCGGCCAG GGCTAGCTACAACGA GGGGACGT	14756
4624	CCCCCGUG G CCGGUUAG	6008	CATACCGG GGCTAGCTACAACGA CAGCGGGG	14757
4620	GCUGGCCG G UAUGACGG	6009	CCGTCATA GGCTAGCTACAACGA CGGCCAGC	14758
4618	UGGCCGGU A UGACGGAC	6010	GTCCGTGA GGCTAGCTACAACGA ACCGGCCA	14759
4615	CCGGUUAU A CGGACACG	6011	CGTGTCCG GGCTAGCTACAACGA CATACCGG	14760
4611	UAUGACGG A CACGUCGA	6012	TCCGCTGG GGCTAGCTACAACGA CCGTCATA	14761
4609	UGACGGAC A CGUCGAGA	6013	TCTCGACG GGCTAGCTACAACGA GTCCGTCA	14762
4607	ACGGACAC G UCGAGACC	6014	GGTCTCGA GGCTAGCTACAACGA GTGTCCGT	14763
4601	ACGUCCGAG A CCCCAGUA	6015	TACCGGGG GGCTAGCTACAACGA CTCGACGT	14764
4595	AGACCCCG G UAAUACGC	6016	GCGTATTA GGCTAGCTACAACGA CGGGGTCT	14765
4592	CCCCGGUA A UACGCUAC	6017	GTAGCGTA GGCTAGCTACAACGA TACCGGGG	14766
4590	CCGGUAAU A CGCUACAG	6018	CTGTAGCG GGCTAGCTACAACGA ATTACCGG	14767
4588	GGUAAUAC G CUACAGCG	6019	CGCTGTAG GGCTAGCTACAACGA GTATTACC	14768
4585	AAUACGCU A CAGCGUUA	6020	TAACGCTG GGCTAGCTACAACGA AGCTATT	14769
4582	ACGCUACA G CGUUAAGU	6021	ACTTAACG GGCTAGCTACAACGA TGTAGCGT	14770
4580	GCUACAGC G UUAAGUCC	6022	GGACTTAA GGCTAGCTACAACGA GCTGTAGC	14771
4575	AGCGUUAU G UCCGAGGC	6023	GCCTCGGA GGCTAGCTACAACGA TTAACGCT	14772
4568	AGUCCGAG G CCCGACAG	6024	CTGTCCGG GGCTAGCTACAACGA CTCGGACT	14773
4563	GAGGCCCG A CAGCUUUG	6025	CAAAGCTG GGCTAGCTACAACGA CGGGCCTC	14774
4560	CCCCGACA G CUUUGCAG	6026	CTGCAAAG GGCTAGCTACAACGA TGTCGGGC	14775
4555	ACAGCUUU G CAGCGAGC	6027	GCTCGCTG GGCTAGCTACAACGA AAAGCTGT	14776
4552	GCUUUGCA G CGAGCUCG	6028	CGAGCTCG GGCTAGCTACAACGA TGCAAAGC	14777
4548	UGCAGCGA G CUCGUCAC	6029	GTGACGAG GGCTAGCTACAACGA TCGCTGCA	14778
4544	GCGAGCUC G UCACAUUU	6030	AAATGTGA GGCTAGCTACAACGA GAGCTCGC	14779
4541	AGCUCGUC A CAUUUCUU	6031	AAGAAATG GGCTAGCTACAACGA GACGAGCT	14780
4539	CUCGUCAC A UUUCUUCU	6032	AGAAGAAA GGCTAGCTACAACGA GTGACGAG	14781
4526	UUCUUGGA A UGGCAGAA	6033	TTCTGCCA GGCTAGCTACAACGA TCCAAGAA	14782
4523	UUGGAAUG G CAGAAGAU	6034	ATCTTCTG GGCTAGCTACAACGA CATTCCAA	14783
4516	GGCAGAAG A UGAGAUGC	6035	GCATCTCA GGCTAGCTACAACGA CTTCTGCC	14784
4511	AAGAUGAG A UGCCUCCC	6036	GGGAGGCA GGCTAGCTACAACGA CTCATCTT	14785
4509	GAUGAGAU G CCUCCCCC	6037	GGGGGAGG GGCTAGCTACAACGA ATCTCATC	14786
4495	CCCCUUUG A UGGUCUCG	6038	CGAGACCA GGCTAGCTACAACGA CAAAGGGG	14787
4492	CUUUGAUG G UCUCGAUG	6039	CATCGAGA GGCTAGCTACAACGA CATCAAAG	14788
4486	UGGUCUCG A UGGGGAUG	6040	CATCCCCA GGCTAGCTACAACGA CGAGACCA	14789
4480	CGAUGGGG A UGGCUUUG	6041	CAAAGCCA GGCTAGCTACAACGA CCCCATCG	14790

4477	UGGGGAUG G CUUUGCCA	6042	TGGCAAAG GGCTAGCTACAACGA CATCCCCA	14791
4472	AUGGCUUU G CCAUAGAA	6043	TTCTATGG GGCTAGCTACAACGA AAAGCCAT	14792
4469	GCUUUGCC A UAGAAGGG	6044	CCCTTCTA GGCTAGCTACAACGA GGCAAAGC	14793
4459	AGAAGGGG A UCUCUCCG	6045	CGGAGAGA GGCTAGCTACAACGA CCCTTCT	14794
4450	UCUCUCCG G UGUUGGAC	6046	GTCCAACA GGCTAGCTACAACGA CGGAGAGA	14795
4448	UCUCCGGU G UUGGACAA	6047	TTGTCCAA GGCTAGCTACAACGA ACCGGAGA	14796
4443	GGUGUUGG A CAAGGCUA	6048	TAGCCTTG GGCTAGCTACAACGA CCAACACC	14797
4438	UGGACAAG G CUAUCUCC	6049	GGAGATAG GGCTAGCTACAACGA CTTGTCCA	14798
4435	ACAAGGCU A UCUCUCCG	6050	CGAGGAGA GGCTAGCTACAACGA AGCCTTGT	14799
4426	UCUCUCCG A UGUUGGGA	6051	TCCCAACA GGCTAGCTACAACGA CGAGGAGA	14800
4424	UCCUGCAU G UUGGAUG	6052	CATCCCAA GGCTAGCTACAACGA ATCGAGGA	14801
4418	AUGUUGGG A UGUUGCAC	6053	GTGCCACA GGCTAGCTACAACGA CCCAACAT	14802
4416	GUUGGGAU G UGGCACGG	6054	CCGTGCCA GGCTAGCTACAACGA ATCCCAAC	14803
4413	GGGAUGUG G CACGGUGA	6055	TCACCGTG GGCTAGCTACAACGA CACATCCC	14804
4411	GAUGUGGC A CGGUGACC	6056	GGTCACCG GGCTAGCTACAACGA GCCACATC	14805
4408	GUGGCACG G UGACCGAU	6057	ATCGGTCA GGCTAGCTACAACGA CGTGCCAC	14806
4405	GCACGGUG A CCGAUCCC	6058	GGGATCGG GGCTAGCTACAACGA CACCGTGC	14807
4401	GGUGACCG A UCCCGGAG	6059	CTCCGGGA GGCTAGCTACAACGA CGGTCCAC	14808
4392	UCCCGGAG G CGUAGCGG	6060	CCGTACG GGCTAGCTACAACGA CTCGGGA	14809
4390	CCGGAGGC G UAGCGUG	6061	CACCGCTA GGCTAGCTACAACGA GTCTCCGG	14810
4387	GAGGCGUA G CGGUGGCG	6062	CGCCACCG GGCTAGCTACAACGA TACGCTC	14811
4384	GCGUAGCG G UGGCGAGC	6063	GCTCGCCA GGCTAGCTACAACGA CGCTACGC	14812
4381	UAGCGGUG G CGAGCACG	6064	CGTGCTCG GGCTAGCTACAACGA CACCGCTA	14813
4377	GGUGGCGA G CACGACGA	6065	TCGTCTGT GGCTAGCTACAACGA TCGCCACC	14814
4375	UGGCGAGC A CGACGAGC	6066	GCTCGTGT GGCTAGCTACAACGA GCTCGCCA	14815
4372	CGAGCACG A CGAGCCGC	6067	GCGGCTCG GGCTAGCTACAACGA CGTGCTCG	14816
4368	CACGACGA G CCGCGCUC	6068	GAGCGCGG GGCTAGCTACAACGA TCGTCTGT	14817
4365	GACGAGCC G CGCUCCAG	6069	CTGGAGCG GGCTAGCTACAACGA GGCTCGTC	14818
4363	CGAGCCGC G CUCCAGCC	6070	GGCTGGAG GGCTAGCTACAACGA GCGGCTCG	14819
4357	GCGCUCCA G CCGUCUCC	6071	GGAGACGG GGCTAGCTACAACGA TGGAGCGC	14820
4354	CUCCAGCC G UCUCGCU	6072	AGCGGAGA GGCTAGCTACAACGA GGCTGGAG	14821
4348	CCGUCUCC G CUUGGUCC	6073	GGACCAAG GGCTAGCTACAACGA GGAGACGG	14822
4343	UCCGCUUG G UCCAGGAC	6074	GTCCTGGA GGCTAGCTACAACGA CAAGCGGA	14823
4336	GGUCCAGG A CUGUGCCG	6075	CGGCACAG GGCTAGCTACAACGA CCTGGACC	14824
4333	CCAGGACU G UGCCGAUG	6076	CATCGGCA GGCTAGCTACAACGA AGTCTTGG	14825
4331	AGGACUGU G CCGAUGCC	6077	GGCATCGG GGCTAGCTACAACGA ACAGTCTT	14826
4327	CUGUGCCG A UGCCCCAA	6078	TTTGGGCA GGCTAGCTACAACGA CGGCACAG	14827
4325	GUGCCGAU G CCAAAAUA	6079	ATTTTGGG GGCTAGCTACAACGA ATCGGCAC	14828
4318	UGCCCCAA A UGGAAGUC	6080	GACTTCCA GGCTAGCTACAACGA TTTGGGCA	14829
4312	AAAUGGAA G UCGAGUCA	6081	TGACTCGA GGCTAGCTACAACGA TTCCATT	14830
4307	GAAGUCGA G UCAAUUGA	6082	TCAATTGA GGCTAGCTACAACGA TCGACTTC	14831
4303	UCGAGUCA A UUGAGUGG	6083	CCACTCAA GGCTAGCTACAACGA TGACTCGA	14832
4298	UCAAUUGA G UGGCACUC	6084	GAGTGCCA GGCTAGCTACAACGA TCAATTGA	14833
4295	AUUGAGUG G CACUCAUC	6085	GATGAGTG GGCTAGCTACAACGA CACTCAAT	14834
4293	UGAGUGGC A CUCAUCAC	6086	GTGATGAG GGCTAGCTACAACGA GCCACTCA	14835
4289	UGGCACUC A UCACACAU	6087	ATGTGTGA GGCTAGCTACAACGA GAGTGCCA	14836
4286	CACUCAUC A CACAUUAU	6088	ATAATGTG GGCTAGCTACAACGA GATGAGTG	14837
4284	CUCAUCAC A CAUUAUGA	6089	TCATAATG GGCTAGCTACAACGA GTGATGAG	14838
4282	CAUCACAC A UUAUGAUG	6090	CATCATAA GGCTAGCTACAACGA GTGTGATG	14839
4279	CACACAUU A UGAUGUCA	6091	TGACATCA GGCTAGCTACAACGA AATGTGTG	14840
4276	ACAUUAUG A UGUCAUAG	6092	CTATGACA GGCTAGCTACAACGA CATAATGT	14841
4274	AUUAUGAU G UCAUAGGC	6093	GCCTATGA GGCTAGCTACAACGA ATCATAAT	14842
4271	AUGAUGUC A UAGGCGCC	6094	GGCGCCTA GGCTAGCTACAACGA GACATCAT	14843
4267	UGUCAUAG G CGCCCCCA	6095	TGGGGGCG GGCTAGCTACAACGA CTATGACA	14844
4265	UCAUAGGC G CCCCCAGA	6096	TCTGGGGG GGCTAGCTACAACGA GCCTATGA	14845
4256	CCCCCAGA G CAACCACC	6097	GGTGGTTG GGCTAGCTACAACGA TCTGGGGG	14846

4253	CCAGAGCA A CCACCGUC	6098	GACGGTGG GGCTAGCTACAACGA TGCTCTGG	14847
4250	GAGCAACC A CCGUCGGC	6099	GCCGACGG GGCTAGCTACAACGA GGTGCTC	14848
4247	CAACCACC G UCGGCAAG	6100	CTTGCCGA GGCTAGCTACAACGA GGTGGTTG	14849
4243	CACCGUCG G CAAGGAAC	6101	GTTCTTGG GGCTAGCTACAACGA CGACGGTG	14850
4236	GGCAAGGA A CUUGCCAU	6102	ATGGCAAG GGCTAGCTACAACGA TCCTTGCC	14851
4232	AGGAACUU G CCAUAGGU	6103	ACCTATGG GGCTAGCTACAACGA AAGTTCCT	14852
4229	AACUUGCC A UAGGUGGA	6104	TCCACCTA GGCTAGCTACAACGA GGCAAGTT	14853
4225	UGCCAUAG G UGGAGUAC	6105	GTACTCCA GGCTAGCTACAACGA CTATGGCA	14854
4220	UAGGUGGA A UACGUGAU	6106	ATCACGTA GGCTAGCTACAACGA TCCACCTA	14855
4218	GGUGGAGU A CGUGAUGG	6107	CCATCAGG GGCTAGCTACAACGA ATCCACC	14856
4216	UGGAGUAC G UGAUGGGG	6108	CCCCATCA GGCTAGCTACAACGA GTACTCCA	14857
4213	AGUACGUG A UGGGGGCG	6109	CGCCCCCA GGCTAGCTACAACGA CACGTACT	14858
4207	UGAUGGGG G CGCCCGUG	6110	CACGGGCG GGCTAGCTACAACGA CCCCATCA	14859
4205	AUGGGGGC G CCCGUGGU	6111	ACCACGGG GGCTAGCTACAACGA GCCCCCAT	14860
4201	GGGCGCCC G UGGUGAUG	6112	CATCACCA GGCTAGCTACAACGA GGGCGCCC	14861
4198	CGCCCGUG G UGAUGGUC	6113	GACCATCA GGCTAGCTACAACGA CACGGGCG	14862
4195	CCGUGGUG A UGGUCCUU	6114	AAGGACCA GGCTAGCTACAACGA CACCACGG	14863
4192	UGGUGAUG G UCCUUAAC	6115	GGTAAGGA GGCTAGCTACAACGA CATCACA	14864
4186	UGGUCCUU A CCCCAGUU	6116	AACTGGGG GGCTAGCTACAACGA AAGGACCA	14865
4180	UUACCCCA G UUCUGAUG	6117	CATCAGAA GGCTAGCTACAACGA TGGGGTAA	14866
4174	CAGUUCUG A UGUUAGGA	6118	TCCTAACA GGCTAGCTACAACGA CAGAACTG	14867
4172	GUUCUGAU G UUAGGAUC	6119	GATCCTAA GGCTAGCTACAACGA ATCAGAAC	14868
4166	AUGUAGG A UCGACACC	6120	GGTGTGCA GGCTAGCTACAACGA CCTAACAT	14869
4162	UAGGAUCG A CACCGUGU	6121	ACACGGTG GGCTAGCTACAACGA CGATCCTA	14870
4160	GGAUUCG A CCGUGUGC	6122	GCACACGG GGCTAGCTACAACGA GTCGATCC	14871
4157	UCGACACC G UGUGCCUU	6123	AAGGCACA GGCTAGCTACAACGA GGTGTGCA	14872
4155	GACACCGU G UGCCUAG	6124	CTAAGGCA GGCTAGCTACAACGA ACGGTGTC	14873
4153	CACCGUGU G CCUUAAG	6125	GTCTAAGG GGCTAGCTACAACGA ACACGGTG	14874
4146	UGCCUUAAG A CAUAUACG	6126	CGTATATG GGCTAGCTACAACGA CTAAGGCA	14875
4144	CCUUAAG A UAUACGCC	6127	GGCGTATA GGCTAGCTACAACGA GTCTAAGG	14876
4142	UUAGACAU A UACGCCCC	6128	GGGGCGTA GGCTAGCTACAACGA ATGTCTAA	14877
4140	AGACAUAU A CGCCCCAA	6129	TTGGGGCG GGCTAGCTACAACGA ATATGTCT	14878
4138	ACAUUAC G CCCCACAA	6130	GTTTGGGG GGCTAGCTACAACGA GTATATGT	14879
4131	CGCCCCAA A CCCUAGG	6131	CCTTAGGG GGCTAGCTACAACGA TTGGGGCG	14880
4123	ACCCUAGG A UGGCGGUA	6132	TACCGCCA GGCTAGCTACAACGA CTTAGGTT	14881
4120	CUAAGGUG G CGGUAAACG	6133	CGTTACCG GGCTAGCTACAACGA CACCTTAG	14882
4117	AGGUGGCG G UAACGGAC	6134	GTCCGTTA GGCTAGCTACAACGA CGCCACCT	14883
4114	UGGCGGUA A CGGACGGA	6135	TCCGTCCG GGCTAGCTACAACGA TACCGCCA	14884
4110	GGUAAACG A CGGAUUUA	6136	TAAATCCG GGCTAGCTACAACGA CCGTTACC	14885
4106	ACGGACGG A UUUAGGAC	6137	GTCTTAAA GGCTAGCTACAACGA CCGTCCGT	14886
4099	GAUUUAGG A CGAGCACU	6138	AGTGCTCG GGCTAGCTACAACGA CCTAAATC	14887
4095	UAGGACGA G CACUUUGU	6139	ACAAAGTG GGCTAGCTACAACGA TCGTCCTA	14888
4093	GGACGAGC A CUUUGUAC	6140	GTACAAAG GGCTAGCTACAACGA GTCGTCTC	14889
4088	AGCACUUU G UACCCUUG	6141	CAAGGGTA GGCTAGCTACAACGA AAAGTGCT	14890
4086	CACUUUGU A CCCUUGGG	6142	CCCAAGGG GGCTAGCTACAACGA ACAAAGTG	14891
4078	ACCCUUGG G CUGCAUUA	6143	ATATGCAG GGCTAGCTACAACGA CCAAGGGT	14892
4075	CUUGGGCU G CAUAUGCA	6144	TGCATATG GGCTAGCTACAACGA AGCCCAAG	14893
4073	UGGGGUGC A UAUGCAGC	6145	GCTGCATA GGCTAGCTACAACGA GCAGCCCA	14894
4071	GGCUGCAU A UGCAGCCG	6146	CGGTCGCA GGCTAGCTACAACGA ATGCAGCC	14895
4069	CUGCAUUA G CAGCCGGU	6147	ACCGGCTG GGCTAGCTACAACGA ATATGCAG	14896
4066	CAUAUGCA G CCGGUACC	6148	AGTACCGG GGCTAGCTACAACGA TGCATATG	14897
4062	UGCAGCCG G UACCUUAG	6149	CTAAGGTA GGCTAGCTACAACGA CGGTGCA	14898
4060	CAGCCGGU A CCUUAUGU	6150	CACCTAAG GGCTAGCTACAACGA ACCGGCTG	14899
4054	GUACCUUA G UGCUCUUG	6151	CAAGAGCA GGCTAGCTACAACGA TAAGGTAC	14900
4052	ACCUUAGU G CUCUUGCC	6152	GGCAAGAG GGCTAGCTACAACGA ACTAAGGT	14901
4046	GUGUCUUU G CCGCUGCC	6153	GGCAGCGG GGCTAGCTACAACGA AAGAGCAC	14902

4043	CUCUUGCC G CUGCCAGU	6154	ACTGGCAG GGCTAGCTACAACGA GGCAAGAG	14903
4040	UUGCCGCU G CCAGUGGG	6155	CCCCTGG GGCTAGCTACAACGA AGCGGCAA	14904
4036	CGCUGCCA G UGGGAGCG	6156	CGCTCCA GGCTAGCTACAACGA TGGCAGCG	14905
4030	CAGUGGGA G CGUGUAGG	6157	CCTACACG GGCTAGCTACAACGA TCCCCTG	14906
4028	GUGGGAGC G UGUAGGUG	6158	CACCTACA GGCTAGCTACAACGA GCTCCCAC	14907
4026	GGGAGCGU G UAGGUGGG	6159	CCCACCTA GGCTAGCTACAACGA ACGCTCCC	14908
4022	GCGUGUAG G UGGGCCAC	6160	GTGGCCCA GGCTAGCTACAACGA CTACACGC	14909
4018	GUAGGUGG G CCACUUGG	6161	CCAAGTGG GGCTAGCTACAACGA CCACCTAC	14910
4015	GGUGGGCC A CUUGGAAU	6162	ATTCCAAG GGCTAGCTACAACGA GGCCCACC	14911
4008	CACUUGGA A UGUCUGCG	6163	CGCAGACA GGCTAGCTACAACGA TCCAAGTG	14912
4006	CUUGGAAU G UCUGCGGU	6164	ACCGCAGA GGCTAGCTACAACGA ATTCCAAG	14913
4002	GAAUGUCU G CGGUACGG	6165	CCGTACCG GGCTAGCTACAACGA AGACATTC	14914
3999	UGUCUGCG G UACGGCUG	6166	CAGCCGTA GGCTAGCTACAACGA CGCAGACA	14915
3997	UCUGCGGU A CGGCGUGG	6167	CCCAGCCG GGCTAGCTACAACGA ACCGCAGA	14916
3994	GCGGUACG G CUGGGGGG	6168	CCCCCAG GGCTAGCTACAACGA CGTACCGC	14917
3984	UGGGGGGG A CGAGUUGU	6169	ACAACCTG GGCTAGCTACAACGA CCCCCCA	14918
3980	GGGACGA G UUGUCCGU	6170	ACGGACAA GGCTAGCTACAACGA TCGTCCCC	14919
3977	GACGAGUU G UCCGUGAA	6171	TTCACGGA GGCTAGCTACAACGA AACTCGTC	14920
3973	AGUUGUCC G UGAAGACC	6172	GGTCTTCA GGCTAGCTACAACGA GGACAACT	14921
3967	CCGUGAAG A CCGGGGAC	6173	GTCCCCGG GGCTAGCTACAACGA CTTCACGG	14922
3960	GACCGGG A CCGCAUGG	6174	CCATCCGG GGCTAGCTACAACGA CCCCCTG	14923
3957	CGGGGACC G CAUGGUAG	6175	CTACCATG GGCTAGCTACAACGA GGTCCCCG	14924
3955	GGGACCGC A UGGUAGUU	6176	AACTACCA GGCTAGCTACAACGA GCGGTCCC	14925
3952	ACCGCAUG G UAGUUUCC	6177	GGAAACTA GGCTAGCTACAACGA CATGCGGT	14926
3949	GCAUGGUA G UUUCCAUA	6178	TATGGAAA GGCTAGCTACAACGA TACCATGC	14927
3943	UAGUUUCC A UAGACUCA	6179	TGAGTCTA GGCTAGCTACAACGA GGAAACTA	14928
3939	UUCCAUA G CUCAACGG	6180	CCGTTGAG GGCTAGCTACAACGA CTATGGAA	14929
3934	UAGACUCA A CCGGUACA	6181	TGTACCCG GGCTAGCTACAACGA TGAGTCTA	14930
3930	CUCAACGG G UACAAAGU	6182	ACTTTGTA GGCTAGCTACAACGA CCGTTGAG	14931
3928	CAACGGGU A CAAAGUCC	6183	GGACTTTG GGCTAGCTACAACGA ACCCGTTG	14932
3923	GGUACAAA G UCCACCGC	6184	GCGGTGGA GGCTAGCTACAACGA TTTGTACC	14933
3919	CAAAGUCC A CCGCCUUC	6185	GAAGGCGG GGCTAGCTACAACGA GGACTTTG	14934
3916	AGUCCACC G CCUUCGCA	6186	TGCGAAGG GGCTAGCTACAACGA GGTGGACT	14935
3910	CCGCCUUC G CAACCCCC	6187	GGGGGTTG GGCTAGCTACAACGA GAAGGCGG	14936
3907	CCUUCGCA A CCCCCCGG	6188	CCGGGGGG GGCTAGCTACAACGA TGCGAAGG	14937
3898	CCCCCCGG G UGCACACA	6189	TGTGTGCA GGCTAGCTACAACGA CCGGGGGG	14938
3896	CCCCGGGU G CACACAGC	6190	GCTGTGTG GGCTAGCTACAACGA ACCCGGGG	14939
3894	CCGGGUGC A CACAGCAG	6191	CTGTGTGT GGCTAGCTACAACGA GCACCCGG	14940
3892	GGGUGCAC A CAGCAGCC	6192	GGCTGCTG GGCTAGCTACAACGA GTGCACCC	14941
3889	UGCACACA G CAGCCCGG	6193	CCGGGCTG GGCTAGCTACAACGA TGTGTGCA	14942
3886	ACACAGCA G CCCGGAAG	6194	CTTCCGGG GGCTAGCTACAACGA TGCTGTGT	14943
3877	CCCGGAAG A UGCCCACA	6195	TGTGGGCA GGCTAGCTACAACGA CTTCCGGG	14944
3875	CGGAAGAU G CCCACAAC	6196	GTTGTGGG GGCTAGCTACAACGA ATCTTCCG	14945
3871	AGAUGCCC A CAACGUGC	6197	GCACGTTG GGCTAGCTACAACGA GGGCATCT	14946
3868	UGCCCACA A CGUGCCCC	6198	GGGGCAGG GGCTAGCTACAACGA TGTGGGCA	14947
3866	CCCACAAC G UGCCCCGA	6199	TCCGGGCA GGCTAGCTACAACGA GTTGTGGG	14948
3864	CACAACGU G CCCCGAAG	6200	CTTCGGGG GGCTAGCTACAACGA ACGTTGTG	14949
3854	CCCGAAGG G CAGAGCAG	6201	CTGCTCTG GGCTAGCTACAACGA CCTTCGGG	14950
3849	AGGGCAGA G CAGUGGAC	6202	GTCCACTG GGCTAGCTACAACGA TCTGCCCT	14951
3846	GCAGAGCA G UGGACCGC	6203	GCGGTCCA GGCTAGCTACAACGA TGCTCTGC	14952
3842	AGCAGUGG A CCGCCCGA	6204	TCGGGCGG GGCTAGCTACAACGA CCACTGCT	14953
3839	AGUGGACC G CCCGAGGA	6205	TCCTCGGG GGCTAGCTACAACGA GGTCCACT	14954
3830	CCCGAGGA G CCUUCAA	6206	TTGAAGGG GGCTAGCTACAACGA TCCTCGGG	14955
3821	CCCUUCA G UAGGAGAU	6207	ATCTCCTA GGCTAGCTACAACGA TTGAAGGG	14956
3814	AGUAGGAG A UGGGCCUG	6208	CAGGCCCA GGCTAGCTACAACGA CTCTACT	14957
3810	GGAGAUGG G CCUGGGGG	6209	CCCCCAGG GGCTAGCTACAACGA CCATCTCC	14958

3801	CCUGGGGG A UAGUAAGC	6210	GCTTACTA GGCTAGCTACAACGA CCCCAGG	14959
3798	GGGGGAUA G UAAGCUCC	6211	GGAGCTTA GGCTAGCTACAACGA TATCCCCC	14960
3794	GAUAGUAA G CUCCCCCU	6212	AGGGGGAG GGCTAGCTACAACGA TTAATATC	14961
3785	CUCCCCCU G CUGUCACC	6213	GGTGACAG GGCTAGCTACAACGA AGGGGGAG	14962
3782	CCCCUGCU G UCACCCCG	6214	CGGGGTGA GGCTAGCTACAACGA AGCAGGGG	14963
3779	CUGCUGUC A CCCC GCCG	6215	CGGCGGGG GGCTAGCTACAACGA GACAGCAG	14964
3774	GUCACCCC G CCGGCGCA	6216	TGCGCCGG GGCTAGCTACAACGA GGGGTGAC	14965
3770	CCCCGCCG G CGCACCGG	6217	CCGGTGCG GGCTAGCTACAACGA CGGCGGGG	14966
3768	CCGCGGGC G CACCGGAA	6218	TTCCGGTG GGCTAGCTACAACGA GCCGGCGG	14967
3766	GCCGGCGC A CCGGAAUG	6219	CATTCCGG GGCTAGCTACAACGA GCGCCGGC	14968
3760	GCACCGGA A UGACAUCA	6220	TGATGTCA GGCTAGCTACAACGA TCCGGTGC	14969
3757	CCGGAAUG A CAUCAGCG	6221	CGCTGATG GGCTAGCTACAACGA CATTCGGG	14970
3755	GGAAUGAC A UCAGCGUG	6222	CACGCTGA GGCTAGCTACAACGA GTCAATTC	14971
3751	UGACAUCA G CGUGUCUC	6223	GAGACACG GGCTAGCTACAACGA TGATGTCA	14972
3749	ACAUCAGC G UGUCUCGU	6224	ACGAGACA GGCTAGCTACAACGA GCTGATGT	14973
3747	AUCAGCGU G UCUCGUGA	6225	TCACGAGA GGCTAGCTACAACGA ACGCTGAT	14974
3742	CGUGUCUC G UGACCAAG	6226	CTTGCTCA GGCTAGCTACAACGA GAGACACG	14975
3739	GUCUCGUG A CCAAGUAA	6227	TTACTTGG GGCTAGCTACAACGA CACGAGAC	14976
3734	GUGACCAA G UAAAGGUC	6228	GACCTTTA GGCTAGCTACAACGA TTGGTCAC	14977
3728	AAGUAAAG G UCCGAGCC	6229	GGCTCGGA GGCTAGCTACAACGA CTTTACTT	14978
3722	AGGUCCGA G CCGCGCA	6230	TGCGGCGG GGCTAGCTACAACGA TCGGACCT	14979
3719	UCCGAGCC G CCGCAGGU	6231	ACCTGCGG GGCTAGCTACAACGA GGTCGGA	14980
3716	GAGCCGCC G CAGGUGCA	6232	TGCACCTG GGCTAGCTACAACGA GGCGGCTC	14981
3712	CGCCGCAG G UGCAUGGU	6233	ACCATGCA GGCTAGCTACAACGA CTGCGGCG	14982
3710	CCGAGGU G CAUGGUGU	6234	ACACCATG GGCTAGCTACAACGA ACCTGCGG	14983
3708	GCAGGUGC A UGGUGUCA	6235	TGACACCA GGCTAGCTACAACGA GCACCTGC	14984
3705	GGUGCAUG G UGUCAAGG	6236	CCTTGACA GGCTAGCTACAACGA CATGCACC	14985
3703	UGCAUGGU G UCAAGGAC	6237	GTCTTTGA GGCTAGCTACAACGA ACCATGCA	14986
3696	UGUCAAGG A CCGGCUC	6238	GAGCGCGG GGCTAGCTACAACGA CCTTGACA	14987
3693	CAAGGACC G CGCUCGG	6239	CCGAGCGG GGCTAGCTACAACGA GGTCTTGG	14988
3691	AGGACCGC G CUCCGGGG	6240	CCCCGGAG GGCTAGCTACAACGA GCGGTCTT	14989
3681	UCCGGGGG G CGCCGCC	6241	GGCCGGCG GGCTAGCTACAACGA CCCCAGGA	14990
3679	CGGGGGGC G CCGCCAU	6242	ATGGCCGG GGCTAGCTACAACGA GCCCCCCG	14991
3675	GGGCGCCG G CCAUCCGA	6243	TCGGATGG GGCTAGCTACAACGA CGGCGCCC	14992
3672	CGCCGGCC A UCCGACGA	6244	TCGTGCGA GGCTAGCTACAACGA GGCCGGCG	14993
3667	GCCAUCCG A CGAGGUCC	6245	GGACCTCG GGCTAGCTACAACGA CGGATGGC	14994
3662	CCGACGAG G UCCUGGUC	6246	GACCAGGA GGCTAGCTACAACGA CTCGTGGG	14995
3656	AGGUCCUG G UCUACAUU	6247	AATGTAGA GGCTAGCTACAACGA CAGGACCT	14996
3652	CCUGGUCU A CAUUGGUG	6248	CACCAATG GGCTAGCTACAACGA AGACCAGG	14997
3650	UGGUCUAC A UUGGUGUA	6249	TACACCAA GGCTAGCTACAACGA GTAGACCA	14998
3646	CUACAUUG G UGUACAUU	6250	AATGTACA GGCTAGCTACAACGA CAATGTAG	14999
3644	ACAUUGGU G UACAUUUG	6251	CAAAATGT GGCTAGCTACAACGA ACCAATGT	15000
3642	AUUGGUGU A CAUUGGG	6252	CCCAAATG GGCTAGCTACAACGA ACACCAAT	15001
3640	UGGUGUAC A UUGGGUG	6253	CACCCAAA GGCTAGCTACAACGA GTACACCA	15002
3634	ACAUUGG G UGAUUGGA	6254	TCCAATCA GGCTAGCTACAACGA CCAAATGT	15003
3631	UUGGGUG A UUGGACCC	6255	GGGTCCAA GGCTAGCTACAACGA CACCCAAA	15004
3626	GUGAUUGG A CCCUUGG	6256	CCAAAGGG GGCTAGCTACAACGA CCAATCAC	15005
3617	CCCUUGG G CCGCUAG	6257	CTAGCCGG GGCTAGCTACAACGA CCAAAGGG	15006
3613	UUGGGCCG G CUAGGGUC	6258	GACCCTAG GGCTAGCTACAACGA CGGCCCAA	15007
3607	CGGCUAGG G UCUUGAG	6259	CTCAAAGA GGCTAGCTACAACGA CCTAGCCG	15008
3599	GUCUUGA G CCGGCGCC	6260	GGCGCCGG GGCTAGCTACAACGA TCAAAGAC	15009
3595	UUGAGCCG G CGCCGUGG	6261	CCACGGCG GGCTAGCTACAACGA CGGCTCAA	15010
3593	GAGCCGGC G CCGUGGUA	6262	TACCACGG GGCTAGCTACAACGA GCCGGCTC	15011
3590	CCGCGGCC G UGUAGAC	6263	GTCTACCA GGCTAGCTACAACGA GCGCGCCG	15012
3587	GCGCCGUG G UAGACAGU	6264	ACTGTCTA GGCTAGCTACAACGA CACGGCGC	15013
3583	CGUGGUAG A CAGUCCAG	6265	CTGGACTG GGCTAGCTACAACGA CTACCACG	15014

3580	GGUAGACA G UCCAGCAC	6266	GTGCTGGA GGCTAGCTACAACGA TGTCTACC	15015
3575	ACAGUCCA G CACACGCC	6267	GGCGTGTG GGCTAGCTACAACGA TGGACTGT	15016
3573	AGUCCAGC A CACGCCGU	6268	ACGGCGTG GGCTAGCTACAACGA GCTGGACT	15017
3571	UCCAGCAC A CGCCGUUG	6269	CAACGCCG GGCTAGCTACAACGA GTGCTGGA	15018
3569	CAGCACAC G CCGUUGAC	6270	GTCAACGG GGCTAGCTACAACGA GTGTGCTG	15019
3566	CACACGCC G UUGACGCA	6271	TGCGTCAA GGCTAGCTACAACGA GGCGTGTG	15020
3562	CGCCGUUG A CGCAGGUC	6272	GACCTGCG GGCTAGCTACAACGA CAACGGCG	15021
3560	CCGUUGAC G CAGGUCGC	6273	GCGACCTG GGCTAGCTACAACGA GTCAACGG	15022
3556	UGACGCAG G UCGCUAGG	6274	CCTAGCGA GGCTAGCTACAACGA CTGCGTCA	15023
3553	CGCAGGUC G CUAGGAAA	6275	TTTCCTAG GGCTAGCTACAACGA GACCTGCG	15024
3543	UAGGAAAG A CUGCGUCG	6276	CGACGCAG GGCTAGCTACAACGA CTTTCCTA	15025
3540	GAAAGACU G CGUCGCGG	6277	CCGCGACG GGCTAGCTACAACGA AGTCTTTC	15026
3538	AAGACUGC G UCGCGGUG	6278	CACCGCGA GGCTAGCTACAACGA GCAGTCTT	15027
3535	ACUGCGUC G CGGUGGAA	6279	TTCCACCG GGCTAGCTACAACGA GACGCAGT	15028
3532	GCGUCGCG G UGGAAACC	6280	GGTTTCCA GGCTAGCTACAACGA CGCGACGC	15029
3526	CGGUGGAA A CCACUUGA	6281	TCAAGTGG GGCTAGCTACAACGA TTCCACCG	15030
3523	UGGAAACC A CUUGAACU	6282	AGTTCAAG GGCTAGCTACAACGA GGTTTCCA	15031
3517	CCACUUGA A CUUCCCCC	6283	GGGGGAAG GGCTAGCTACAACGA TCAAGTGG	15032
3505	CCCCCUCG A CUUGGUUC	6284	GAACCAAG GGCTAGCTACAACGA CGAGGGGG	15033
3500	UCGACUUG G UUCUUGUC	6285	GACAAGAA GGCTAGCTACAACGA CAAGTCGA	15034
3494	UGGUUCU G UCCCGGCC	6286	GGCGGGGA GGCTAGCTACAACGA AAGAACCA	15035
3488	UUGUCCCG G CCGUGAG	6287	CTCACGGG GGCTAGCTACAACGA CGGGACAA	15036
3484	CCCGGCCG G UGAGGCUG	6288	CAGCCTCA GGCTAGCTACAACGA GGGCCGGG	15037
3479	CCCGUGAG G CUGGUGAU	6289	ATCACCAG GGCTAGCTACAACGA CTCACGGG	15038
3475	UGAGGCUG G UGAUAAUG	6290	CATTATCA GGCTAGCTACAACGA CAGCCTCA	15039
3472	GGCUGGUG A UAAUGCAG	6291	CTGCATTA GGCTAGCTACAACGA CACCAGCC	15040
3469	UGGUGAUA A UGCAGCCA	6292	TGGCTGCA GGCTAGCTACAACGA TATCACCA	15041
3467	GUGAUAAU G CAGCCAAA	6293	TTTGGCTG GGCTAGCTACAACGA ATTATCAC	15042
3464	AUAAUGCA G CCAAACAG	6294	CTGTTTGG GGCTAGCTACAACGA TGCATTAT	15043
3459	GCAGCCAA A CAGGCCCC	6295	GGGGCCTG GGCTAGCTACAACGA TTGGCTGC	15044
3455	CCAAACAG G CCCC CGCU	6296	ACGCGGGG GGCTAGCTACAACGA CTGTTTGG	15045
3450	CAGGCCCC G CGUCUGUU	6297	AACAGACG GGCTAGCTACAACGA GGGGCCTG	15046
3448	GGCCCCGC G UCUGUUGG	6298	CCAACAGA GGCTAGCTACAACGA GCGGGGCC	15047
3444	CCGCGUCU G UUGGGAGU	6299	ACTCCCAA GGCTAGCTACAACGA AGACGCGG	15048
3437	UGUUGGGA G UAGGCCGU	6300	ACGGCCTA GGCTAGCTACAACGA TCCCAACA	15049
3433	GGGAGUAG G CCGUAAUG	6301	CATTACGG GGCTAGCTACAACGA CTACTCCC	15050
3430	AGUAGGCC G UAAUGGGC	6302	GCCCATTA GGCTAGCTACAACGA GGCCTACT	15051
3427	AGGCCGUA A UGGCGCG	6303	CGCGCCCA GGCTAGCTACAACGA TACGGCCT	15052
3423	CGUAAUGG G CGCGAGGA	6304	TCCTCGCG GGCTAGCTACAACGA CCATTACG	15053
3421	UAAUGGGC G CGAGGAGU	6305	ACTCCTCG GGCTAGCTACAACGA GCCCATTA	15054
3414	CGCGAGGA G UCGCCACC	6306	GGTGGCGA GGCTAGCTACAACGA TCCTCGCG	15055
3411	GAGGAGUC G CCACCCCU	6307	AGGGGTGG GGCTAGCTACAACGA GACTCCTC	15056
3408	GAGUCGCC A CCCUGCC	6308	GGCAGGGG GGCTAGCTACAACGA GGCGACTC	15057
3402	CCACCCCU G CCCUCA	6309	TTGAGGGG GGCTAGCTACAACGA AGGGGTGG	15058
3392	CCCUCAAG A CUGUCGGC	6310	GCCGACAG GGCTAGCTACAACGA CTTGAGGG	15059
3389	UCAAGACU G UCGGCUGG	6311	CCAGCCGA GGCTAGCTACAACGA AGTCTTGA	15060
3385	GACUGUCG G CUGGUCCU	6312	AGGACCAG GGCTAGCTACAACGA CGACAGTC	15061
3381	GUCGGCUG G UCCUAGGA	6313	TCCTAGGA GGCTAGCTACAACGA CAGCCGAC	15062
3372	UCCUAGGA G UAUCUCCC	6314	GGGAGATA GGCTAGCTACAACGA TCCTAGGA	15063
3370	CUAGGAGU A UCUCCCUC	6315	GAGGGAGA GGCTAGCTACAACGA ACTCCTAG	15064
3352	CCCUUCGG G CGGAGACA	6316	TGTCTCCG GGCTAGCTACAACGA CCGAAGGG	15065
3346	GGGCGGAG A CAGGUAGA	6317	TCTACCTG GGCTAGCTACAACGA CTCGCCCC	15066
3342	GGAGACAG G UAGACCCA	6318	TGGTCTTA GGCTAGCTACAACGA CTGTCTCC	15067
3338	ACAGGUAG A CCAUAAU	6319	ATTATGGG GGCTAGCTACAACGA CTACCTGT	15068
3334	GUAGACCC A UAAUGAUG	6320	CATCATTA GGCTAGCTACAACGA GGTCTTAC	15069
3331	GACCCAUA A UGAUGUCC	6321	GGACATCA GGCTAGCTACAACGA TATGGGTC	15070



3328	CCAUAUUG A UGUCCCCA	6322	TGGGGACA GGCTAGCTACAACGA CATTATGG	15071
3326	AUAAUGAU G UCCCCACA	6323	TGTGGGGA GGCTAGCTACAACGA ATCATTAT	15072
3320	AUGUCCCC A CACGCCGC	6324	GCGGCGTG GGCTAGCTACAACGA GGGGACAT	15073
3318	GUCCCCAC A CGCCGCGG	6325	CCGCGGCG GGCTAGCTACAACGA GTGGGGAC	15074
3316	CCCCACAC G CCGCGGUG	6326	CACCGCGG GGCTAGCTACAACGA GTGTGGGG	15075
3313	CACACGCC G CGGUGUCU	6327	AGACACCG GGCTAGCTACAACGA GGCCTGTG	15076
3310	ACGCCGCG G UGUCCCCC	6328	GGGAGACA GGCTAGCTACAACGA CGCGGCGT	15077
3308	GCCGCGGU G UCUCCCCC	6329	GGGGGAGA GGCTAGCTACAACGA ACCGCGGC	15078
3295	CCCCCAG G UGAUGAUC	6330	GATCATCA GGCTAGCTACAACGA CTGGGGGG	15079
3292	CCAGGUG G UGAUCUUG	6331	CAAGATCA GGCTAGCTACAACGA CACCTGGG	15080
3289	AGGUGAUG A UCUGAUU	6332	AATCAAGA GGCTAGCTACAACGA CATCACCT	15081
3283	UGAUCUUG A UUUCCAUG	6333	CATGGAAG GGCTAGCTACAACGA CAAGATCA	15082
3277	UGAUUUC A UGUCGAG	6334	CTCCGACA GGCTAGCTACAACGA GGAAATCA	15083
3275	AUUUCCAU G UCGAGAA	6335	TTCTCCGA GGCTAGCTACAACGA ATGGAAAT	15084
3265	CGGAGAAG A CGACGGGC	6336	GCCCGTCG GGCTAGCTACAACGA CTTCTCCG	15085
3262	AGAAGACG A CGGGCUCG	6337	CGAGCCCG GGCTAGCTACAACGA CGTCTTCT	15086
3258	GACGACGG G CUCGACCG	6338	CGGTCGAG GGCTAGCTACAACGA CCGTCGTC	15087
3253	CGGGCUCG A CCGCUACC	6339	GGTAGCGG GGCTAGCTACAACGA CGAGCCCG	15088
3250	GCUCGACC G CUACGCC	6340	GCGGGTAG GGCTAGCTACAACGA GGTGCGAG	15089
3247	CGACCGCU A CCGCCAGG	6341	CCTGGCGG GGCTAGCTACAACGA AGCGGTCG	15090
3244	CCGCUACC G CCAGGUCU	6342	AGACCTGG GGCTAGCTACAACGA GGATGCGG	15091
3239	ACCGCCAG G UCUCGUAG	6343	CTACGAGA GGCTAGCTACAACGA CTGGCGGT	15092
3234	CAGGUCUC G UAGACCUG	6344	CAGGTCTA GGCTAGCTACAACGA GAGACCTG	15093
3230	UCUCGUAG A CCUGUGUG	6345	CACACAGG GGCTAGCTACAACGA CTACGAGA	15094
3226	GUAGACCU G UGUGGGCC	6346	GGCCACA GGCTAGCTACAACGA AGGTCTAC	15095
3224	AGACCUGU G UGGGCCCC	6347	TGGGCCCC GGCTAGCTACAACGA ACAGGTCT	15096
3220	CUGUGUGG G CCCAGUCC	6348	GGACTGGG GGCTAGCTACAACGA CCACACAG	15097
3215	UGGGCCCC G UCCUGCAG	6349	CTGCAGGA GGCTAGCTACAACGA TGGGCCCA	15098
3210	CCAGUCCU G CAGUGGAG	6350	CTCCACTG GGCTAGCTACAACGA AGGACTGG	15099
3207	GUCCUGCA G UGGAGUGA	6351	TCACTCCA GGCTAGCTACAACGA TGCAGGAC	15100
3202	GCAGUGGA G UGAGGUGG	6352	CCACCTCA GGCTAGCTACAACGA TCCACTGC	15101
3197	GGAGUGAG G UGUCAUA	6353	TATGACCA GGCTAGCTACAACGA CTCCTCC	15102
3194	GUGAGGUG G UCAUAGAC	6354	GTCTATGA GGCTAGCTACAACGA CACCTCAC	15103
3191	AGGUGGUC A UAGACGGA	6355	TCCGTCTA GGCTAGCTACAACGA GACCACCT	15104
3187	GGUAUAG A CGGACGUA	6356	TACGTCCG GGCTAGCTACAACGA CTATGACC	15105
3183	AUAGACGG A CGUACCUU	6357	AAGGTACG GGCTAGCTACAACGA CCGTCTAT	15106
3181	AGACGGAC G UACCUUUC	6358	GAAAGGTA GGCTAGCTACAACGA GTCCGTCT	15107
3179	ACGGACGU A CCUUUCA	6359	TTGAAAGG GGCTAGCTACAACGA ACGTCCGT	15108
3171	ACCUUUA A UUCGGCCA	6360	TGGCCGAA GGCTAGCTACAACGA TGAAAGGT	15109
3166	UCAAUUCG G CCAACUUC	6361	GAAGTTGG GGCTAGCTACAACGA CGAATTGA	15110
3162	UUCGGCCA A CUUCAUGA	6362	TCATGAAG GGCTAGCTACAACGA TGGCCGAA	15111
3157	CCAACUUC A UGAAGGCC	6363	GGCCTTCA GGCTAGCTACAACGA GAAGTTGG	15112
3151	UCAUGAAG G CCAUUUGG	6364	CCAAATGG GGCTAGCTACAACGA CTTCTATGA	15113
3148	UGAAGGCC A UUUGGACA	6365	TGTCCAAA GGCTAGCTACAACGA GGCCTTCA	15114
3142	CCAUUUGG A CAUAUUGC	6366	GCAATATG GGCTAGCTACAACGA CCAAATGG	15115
3140	AUUUGGAC A UAUUGCCC	6367	GGGCAATA GGCTAGCTACAACGA GTCCAAAT	15116
3138	UUGGACAU A UUGCCCCC	6368	GGGGGCAA GGCTAGCTACAACGA ATGTCCAA	15117
3135	GACAUUUU G CCCCCAC	6369	GTGGGGGG GGCTAGCTACAACGA AATATGTC	15118
3128	UGCCCCC A CCGACUUU	6370	AAAGTCGG GGCTAGCTACAACGA GGGGGGCA	15119
3124	CCCCACCG A CUUCCGC	6371	GCGGAAAG GGCTAGCTACAACGA CGGTGGGG	15120
3117	GACUUUCC G CACCAAAA	6372	TTTTGGTG GGCTAGCTACAACGA GGAAAGTC	15121
3115	CUUCCGC A CCAAAAUG	6373	CATTTTGG GGCTAGCTACAACGA GCGGAAAG	15122
3109	GCACCAA A UGCAUUA	6374	TGAATGCA GGCTAGCTACAACGA TTTGGTGC	15123
3107	ACCAAAU G CAUUCACG	6375	CGTGAATG GGCTAGCTACAACGA ATTTTGGT	15124
3105	CAAAAUGC A UUCACGGA	6376	TCCGTGAA GGCTAGCTACAACGA GCATTTTG	15125
3101	AUGCAUUC A CGGAUGAC	6377	GTCATCCG GGCTAGCTACAACGA GAATGCAT	15126



3097	AUUCACGG A UGACCCCU	6378	AGGGGTCA GGCTAGCTACAACGA CCGTGAAT	15127
3094	CACGGAUG A CCCCUGA	6379	TCAAGGGG GGCTAGCTACAACGA CATCCGTG	15128
3085	CCCCUGA G CCCGCACA	6380	TGTGCGGG GGCTAGCTACAACGA TCAAGGGG	15129
3081	UUGAGCCC G CACAAAGU	6381	ACTTTGTG GGCTAGCTACAACGA GGGCTCAA	15130
3079	GAGCCCGC A CAAAGUCC	6382	GGACTTTG GGCTAGCTACAACGA GCGGGCTC	15131
3074	CGCACAAA G UCCGGCAC	6383	GTGCCGGA GGCTAGCTACAACGA TTTGTGCG	15132
3069	AAAGUCCG G CACUUUUG	6384	CAAAAGTG GGCTAGCTACAACGA CGGACTTT	15133
3067	AGUCCGGC A CUUUUGCU	6385	AGCAAAAG GGCTAGCTACAACGA GCCGGACT	15134
3061	GCACUUUU G CUAUACCA	6386	TGGTATAG GGCTAGCTACAACGA AAAAGTGC	15135
3058	CUUUUGCU A UACCAGCC	6387	GGCTGGTA GGCTAGCTACAACGA AGCAAAAG	15136
3056	UUUGCUAU A CCAGCCUG	6388	CAGGCTGG GGCTAGCTACAACGA ATAGCAAA	15137
3052	CUAUACCA G CCUGGAGC	6389	GCTCCAGG GGCTAGCTACAACGA TGGTATAG	15138
3045	AGCCUGGA G CACCAUGA	6390	TCTGTTG GGCTAGCTACAACGA TCCAGGCT	15139
3043	CCUGGAGC A CCAUGAGC	6391	GGTCATGG GGCTAGCTACAACGA GCTCCAGG	15140
3040	GGAGCACC A UGAGCGGG	6392	CCCGCTCA GGCTAGCTACAACGA GGTGCTCC	15141
3036	CACCAUGA G CGGGCCGA	6393	TCGGCCCC GGCTAGCTACAACGA TCATGGTG	15142
3032	AUGAGCGG G CCGAGUUA	6394	ATACTCGG GGCTAGCTACAACGA CCGCTCAT	15143
3027	CGGGCCGA G UAUGGCGA	6395	TCGCCATA GGCTAGCTACAACGA TCGGCCCG	15144
3025	GGCCGAGU A UGGCGAGC	6396	GCTCGCCA GGCTAGCTACAACGA ACTCGGCC	15145
3022	CGAGUAUG G CGAGCAUA	6397	TATGCTCG GGCTAGCTACAACGA CATACTCG	15146
3018	UAUGGCGA G CAUAAUUU	6398	AAATTATG GGCTAGCTACAACGA TCGCCATA	15147
3016	UGGCGAGC A UAAUUUUG	6399	CAAAATTA GGCTAGCTACAACGA TCTCGCCA	15148
3013	CGAGCAUA A UUUUGGUG	6400	CACAAAAA GGCTAGCTACAACGA TATGCTCG	15149
3007	UAAUUUUG G UGAUGUCA	6401	TGACATCA GGCTAGCTACAACGA CAAAATTA	15150
3004	UUUUGGUG A UGUCAAAG	6402	CTTTGACA GGCTAGCTACAACGA CACCAAAA	15151
3002	UUGGUGAU G UCAAAGAU	6403	ATCTTTGA GGCTAGCTACAACGA ATCACCAG	15152
2995	UGUCAAAG A UUAGCUCU	6404	AGAGCTAA GGCTAGCTACAACGA CTTTGACA	15153
2991	AAAGAUUA G CUCUGGGU	6405	ACCCAGAG GGCTAGCTACAACGA TAATCTTT	15154
2984	AGCUCUGG G UGGACCAC	6406	GTGGTCCA GGCTAGCTACAACGA CCAGAGCT	15155
2980	CUGGGUGG A CCACACAC	6407	GCTGTGTG GGCTAGCTACAACGA CCACCCAG	15156
2977	GGUGGACC A CACACGUG	6408	CATGTGTG GGCTAGCTACAACGA GGTCCACC	15157
2975	UGGACCAC A CACGUGAG	6409	CTCACGTG GGCTAGCTACAACGA GTGGTCCA	15158
2973	GACCACAC A CGUGAGGA	6410	TCCTCACG GGCTAGCTACAACGA GTGTGGTC	15159
2971	CCACACAC G UGAGGAGA	6411	TCTCCTCA GGCTAGCTACAACGA GTGTGTGG	15160
2962	UGAGGAGA A UGAUGGCA	6412	TGCCATCA GGCTAGCTACAACGA TCTCCTCA	15161
2959	GGAGAAUG A UGGCACCG	6413	CGGTGCCA GGCTAGCTACAACGA CATTCTCC	15162
2956	GAAUGAUG G CACCGCGC	6414	GCGCGGTG GGCTAGCTACAACGA CATCATTC	15163
2954	AUGAUGG A CCGCGCCC	6415	GGGCGCGG GGCTAGCTACAACGA GCCATCAT	15164
2951	AUGGCACC G CGCCCCC	6416	GGGGGGCG GGCTAGCTACAACGA GGTGCCAT	15165
2949	GGCACCAG G CCCCCC	6417	GGGGGGGG GGCTAGCTACAACGA GCGGTGCC	15166
2938	CCCCCCGA A CGUUGAGG	6418	CCTCAACG GGCTAGCTACAACGA TCGGGGGG	15167
2936	CCCCGAAC G UUGAGGGG	6419	CCCCTCAA GGCTAGCTACAACGA GTTCGGGG	15168
2923	GGGGGGGG A UCCACACU	6420	AGTGTGGA GGCTAGCTACAACGA CCCCCC	15169
2919	GGGGAUCC A CACUUGCA	6421	TGCAAGTG GGCTAGCTACAACGA GGATCCCC	15170
2917	GGAUCCAC A CUUGCAAC	6422	GTTGCAAG GGCTAGCTACAACGA GTGGATCC	15171
2913	CCACACUU G CAACUGCG	6423	CGCAGTTG GGCTAGCTACAACGA AAGTGTGG	15172
2910	CACUUGCA A CUGCGCCU	6424	AGGCGCAG GGCTAGCTACAACGA TGCAAGTG	15173
2907	UUGCAACU G CGCCUCGG	6425	CCGAGGCG GGCTAGCTACAACGA AGTTGCAA	15174
2905	GCAACUGC G CCUCGGCU	6426	AGCCGAGG GGCTAGCTACAACGA GCAGTTGC	15175
2899	GCGCCUCG G CUCUGGUG	6427	CACCAGAG GGCTAGCTACAACGA CGAGGCGC	15176
2893	CGGCUCUG G UGAUAAGG	6428	CCTTATCA GGCTAGCTACAACGA CAGAGCCG	15177
2890	CUCUGGUG A UAAGGUUA	6429	ATACCTTA GGCTAGCTACAACGA CACCAGAG	15178
2885	GUGAUAAG G UAUUGCAA	6430	TTGCAATA GGCTAGCTACAACGA CTTATCAC	15179
2883	GAUAAGGU A UUGCAACC	6431	GGTTGCAA GGCTAGCTACAACGA ACCTTATC	15180
2880	AAGGUUAU G CAACCACC	6432	GGTGGTTG GGCTAGCTACAACGA AATACCTT	15181
2877	GUAUUGCA A CCACCAUA	6433	TATGGTGG GGCTAGCTACAACGA TGCAATAC	15182

2874	UUGCAACC A CCAUAUGA	6434	TCATATGG GGCTAGCTACAACGA GGTGCAA	15183
2871	CAACCACC A UAUGAGCC	6435	GGCTCATA GGCTAGCTACAACGA GGTGGTTG	15184
2869	ACCACCAU A UGAGCCUA	6436	TAGGCTCA GGCTAGCTACAACGA ATGGTGGT	15185
2865	CCAUAUGA G CCUAGCGA	6437	TCGCTAGG GGCTAGCTACAACGA TCATATGG	15186
2860	UGAGCCUA G CGAGGAAC	6438	GTTCTCTG GGCTAGCTACAACGA TAGGCTCA	15187
2853	AGCGAGGA A CACUUUGU	6439	ACAAAGTG GGCTAGCTACAACGA TCCTCGCT	15188
2851	CGAGGAAC A CUUUGUAG	6440	CTACAAAG GGCTAGCTACAACGA GTTCCTCG	15189
2846	AACACUUU G UAGUAUGG	6441	CCATACTA GGCTAGCTACAACGA AAAGTGT	15190
2843	ACUUUGUA G UAUGGUGA	6442	TCACCATA GGCTAGCTACAACGA TACAAAGT	15191
2841	UUUGUAGU A UGGUGACA	6443	TGTCCATA GGCTAGCTACAACGA ACTACAAA	15192
2838	GUAGUAUG G UGACAAGG	6444	CCTTGTCG GGCTAGCTACAACGA CATACTAC	15193
2835	GUAUGGUG A CAAGGUCA	6445	TGACCTTG GGCTAGCTACAACGA CACCATAC	15194
2830	GUGACAAG G UCAAGAGU	6446	ACTCTTGA GGCTAGCTACAACGA CTTGTGAC	15195
2823	GGUCAAGA G UGUAGAC	6447	GTCTAGCA GGCTAGCTACAACGA TCTTGACC	15196
2821	UCAAGAGU G CUAGACCU	6448	AGGTCTAG GGCTAGCTACAACGA ACTCTTGA	15197
2816	AGUGCUAG A CCUACAAA	6449	TTTGTAGG GGCTAGCTACAACGA CTAGCACT	15198
2812	CUAGACCU A CAAAAACC	6450	GGTTTTTG GGCTAGCTACAACGA AGGTCTAG	15199
2806	CUACAAAA A CCACGCCU	6451	AGGCGTGG GGCTAGCTACAACGA TTTTGTAG	15200
2803	CAAAAAACC A CGCCUCCG	6452	CGGAGGCG GGCTAGCTACAACGA GGTTTTTG	15201
2801	AAAACCAC G CCUCCGCA	6453	TGCGGAGG GGCTAGCTACAACGA GTGGTTTT	15202
2795	ACGCCUCC G CACGAUGC	6454	GCATCGTG GGCTAGCTACAACGA GGAGGCGT	15203
2793	GCCUCCGC A CGAUGCGG	6455	CCGCATCG GGCTAGCTACAACGA GCGGAGGC	15204
2790	UCCGCACG A UGCGGCCA	6456	TGGCCGCA GGCTAGCTACAACGA CGTGCGGA	15205
2788	CGCACGAU G CGGCCAUC	6457	GATGGCCG GGCTAGCTACAACGA ATCGTGCG	15206
2785	ACGAUGCG G CCAUCUCC	6458	GGAGATGG GGCTAGCTACAACGA CGCATCGT	15207
2782	AUGCGGCC A UCUCGCG	6459	CCGGGAGA GGCTAGCTACAACGA GGCCGCAT	15208
2774	AUCUCCCG G UCCAUGGC	6460	GCCATGGA GGCTAGCTACAACGA CGGGAGAT	15209
2770	CCCGGUCC A UGGCGUAC	6461	GTACGCCA GGCTAGCTACAACGA GGAGCGGG	15210
2767	GGUCCAUG G CGUACGCC	6462	GGCGTACG GGCTAGCTACAACGA CATGGACC	15211
2765	UCCAUGGC G UACGCCCG	6463	CGGGCGTA GGCTAGCTACAACGA GCCATGGA	15212
2763	CAUGGCGU A CGCCCGUG	6464	CACGGGCG GGCTAGCTACAACGA ACGCCATG	15213
2761	UGGCGUAC G CCCGUGGU	6465	ACCACGGG GGCTAGCTACAACGA GTACGCCA	15214
2757	GUACGCCC G UGGUGGUA	6466	TACCACCA GGCTAGCTACAACGA GGGCGTAC	15215
2754	CGCCCGUG G UGUAAACG	6467	CGTTACCA GGCTAGCTACAACGA CACGGGCG	15216
2751	CCGUGGUG G UAACGCCA	6468	TGGCGTTA GGCTAGCTACAACGA CACCACGG	15217
2748	UGGUGGUA A CGCCAGCA	6469	TGCTGGCG GGCTAGCTACAACGA TACCACCA	15218
2746	GUGGUAAC G CCAGCAGG	6470	CCTGCTGG GGCTAGCTACAACGA GTTACCAC	15219
2742	UAACGCCA G CAGGAGCA	6471	TGCTCCTG GGCTAGCTACAACGA TGGCGTTA	15220
2736	CAGCAGGA G CAGGAGUA	6472	TACTCCTG GGCTAGCTACAACGA TCCTGCTG	15221
2730	GAGCAGGA G UAGCGGCC	6473	GGCCGCTA GGCTAGCTACAACGA TCCTGCTC	15222
2727	CAGGAGUA G CGGCCAUA	6474	TATGGCCG GGCTAGCTACAACGA TACTCCTG	15223
2724	GAGUAGCG G CCAUACGC	6475	GCGTATGG GGCTAGCTACAACGA CGCTACTC	15224
2721	UAGCGGCC A UACGCCGU	6476	ACGGCGTA GGCTAGCTACAACGA GGCCGCTA	15225
2719	GCGGCCAU A CGCCGUAG	6477	CTACGGCG GGCTAGCTACAACGA ATGGCCGC	15226
2717	GGCCAUAC G CCGUAGAG	6478	CTCTACGG GGCTAGCTACAACGA GTATGGCC	15227
2714	CAUACGCC G UAGAGAGC	6479	GCTCTCTA GGCTAGCTACAACGA GGCGTATG	15228
2707	CGUAGAGA G CAUAUGCC	6480	GGCATATG GGCTAGCTACAACGA TCTCTACG	15229
2705	UAGAGAGC A UAUGCCGC	6481	GCGGCATA GGCTAGCTACAACGA GCTCTCTA	15230
2703	GAGAGCAU A UGCCGCCC	6482	GGGCGGCA GGCTAGCTACAACGA ATGCTCTC	15231
2701	GAGCAUAU A CCGCCCCA	6483	TCGGGCGG GGCTAGCTACAACGA ATATGCTC	15232
2698	CAUAUGCC G CCCCAGGG	6484	CCGCGGGG GGCTAGCTACAACGA GGCAATGG	15233
2689	CCCCAGGG A CCAGCUUG	6485	CAAGCTGG GGCTAGCTACAACGA CCTGTGGG	15234
2685	AGGGACCA G CUUGCCUU	6486	AAGGCAAG GGCTAGCTACAACGA TGGTCCCT	15235
2681	ACCAGCUU G CCUUUGAU	6487	ATCAAAGG GGCTAGCTACAACGA AAGCTGGT	15236
2674	UGCCUUUG A UGUACCAG	6488	CTGGTACA GGCTAGCTACAACGA CAAAGGCA	15237
2672	CCUUUGAU G UACCAGGC	6489	GCCTGGTA GGCTAGCTACAACGA ATCAAAGG	15238

2670	UUUGAUGU A CCAGGCAG	6490	CTGCCTGG GGCTAGCTACAACGA ACATCAAA	15239
2665	UGUACCAG G CAGCACAG	6491	CTGTGCTG GGCTAGCTACAACGA CTGGTACA	15240
2662	ACCAGGCA G CACAGAAG	6492	CTTCTGTG GGCTAGCTACAACGA TGCCTGGT	15241
2660	CAGGCAGC A CAGAAGAA	6493	TTCTTCTG GGCTAGCTACAACGA GTCGCCTG	15242
2652	ACAGAAGA A CACGAGGA	6494	TCCTCGTG GGCTAGCTACAACGA TCTTCTGT	15243
2650	AGAGAAG A CGAGGAAG	6495	CTTCCTCG GGCTAGCTACAACGA GTTCTTCT	15244
2635	AGGAGAGG A UGCCAUGC	6496	GCATGGCA GGCTAGCTACAACGA CCTCTCCT	15245
2633	GAGAGGAU G CCAUGCAC	6497	GTGCATGG GGCTAGCTACAACGA ATCCTCTC	15246
2630	AGGAUGCC A UGCACUCC	6498	GGAGTGCA GGCTAGCTACAACGA GGCATCCT	15247
2628	GAUGCCAU G CACUCCGG	6499	CCGGAGTG GGCTAGCTACAACGA ATGGCATC	15248
2626	UGCCAUGC A CUCCGGCC	6500	GGCCGGAG GGCTAGCTACAACGA GCATGGCA	15249
2620	GCACUCCG G CCAAGGAU	6501	ATCCTTGG GGCTAGCTACAACGA CGGAGTGC	15250
2613	GGCCAAGG A UGUGCAU	6502	ATGACAGA GGCTAGCTACAACGA CTTTGGCC	15251
2611	CCAAGGAU G CUGCAUUG	6503	CAATGCAG GGCTAGCTACAACGA ATCCTTGG	15252
2608	AGGAUGCU G CAUUGAGG	6504	CCTCAATG GGCTAGCTACAACGA AGCATCCT	15253
2606	GAUGCUGC A UUGAGGAC	6505	GTCCTCAA GGCTAGCTACAACGA GCAGCATC	15254
2599	CAUUGAGG A CCACCAGG	6506	CCTGGTGG GGCTAGCTACAACGA CCTCAATG	15255
2596	UGAGGACC A CCAGGUUC	6507	GAACCTGG GGCTAGCTACAACGA GTCTCTCA	15256
2591	ACCACCAG G UUCUCUAG	6508	CTAGAGAA GGCTAGCTACAACGA CTGGTGGT	15257
2581	UCUCUAGG G CAGCCUCG	6509	CGAGGCTG GGCTAGCTACAACGA CCTAGAGA	15258
2578	CUAGGGCA G CCUCGGCC	6510	GGCCGAGG GGCTAGCTACAACGA TGCCCTAG	15259
2572	CAGCCUCG G CCUGGGCU	6511	AGCCCAGG GGCTAGCTACAACGA CGAGGCTG	15260
2566	CGGCCUGG G CUACCAAC	6512	GTTGGTAG GGCTAGCTACAACGA CCAGGCCG	15261
2563	CCUGGGCU A CCAACAGC	6513	GCTGTTGG GGCTAGCTACAACGA AGCCCAGG	15262
2559	GGCUACCA A CAGCAUCA	6514	TGATGCTG GGCTAGCTACAACGA TGGTAGCC	15263
2556	UACCAACA G CAUCAUCC	6515	GGATGATG GGCTAGCTACAACGA TGTGGTA	15264
2554	CCAACAGC A UCAUCCAC	6516	GTGGATGA GGCTAGCTACAACGA GCTGTTGG	15265
2551	ACAGCAUC A UCCACAAA	6517	TTTGTGGA GGCTAGCTACAACGA GATGCTGT	15266
2547	CAUCAUCC A CAAACAGG	6518	CCTGTTTG GGCTAGCTACAACGA GGATGATG	15267
2543	AUCCACAA A CAGGCACA	6519	TGTGCTGG GGCTAGCTACAACGA TTGTGGAT	15268
2539	ACAAACAG G CACAGACG	6520	CGTCTGTG GGCTAGCTACAACGA CTGTTTGT	15269
2537	AAACAGGC A CAGACGCG	6521	CGCGTCTG GGCTAGCTACAACGA GCCTGTTT	15270
2533	AGGCACAG A CGCGCGCG	6522	CGCGCGCG GGCTAGCTACAACGA CTGTGCCT	15271
2531	GCACAGAC G CGCGGUC	6523	GACGCGCG GGCTAGCTACAACGA GTCTGTGC	15272
2529	ACAGACGC G CGCGUCUG	6524	CAGACGCG GGCTAGCTACAACGA GCGTCTGT	15273
2527	AGACGCGC G CGUCUGCC	6525	GGCAGACG GGCTAGCTACAACGA GCGGCTCT	15274
2525	ACGCGCGC G UCUGCCAG	6526	CTGGCAGA GGCTAGCTACAACGA GCGGCGGT	15275
2521	GCGGUCU G CCAGGAGA	6527	TCTCTGTG GGCTAGCTACAACGA AGACGCGC	15276
2505	AAGGAAAA G CAACAGGA	6528	TCCTGTTG GGCTAGCTACAACGA TTTTCTTT	15277
2502	GAAAAGCA A CAGGACAU	6529	ATGTCCTG GGCTAGCTACAACGA TGCTTTTC	15278
2497	GCAACAGG A CAUACUCC	6530	GGAGTATG GGCTAGCTACAACGA CCTGTTGC	15279
2495	AACAGGAC A UACUCCCA	6531	TGGGAGTA GGCTAGCTACAACGA GTCCTGTT	15280
2493	CAGGACAU A CUCCCAU	6532	AATGGGAG GGCTAGCTACAACGA ATGTCCTG	15281
2487	AUACUCCC A UUUGAUUG	6533	CAATCAAA GGCTAGCTACAACGA GGGAGTAT	15282
2482	CCCAUUUG A UUGCGAAG	6534	CTTCGCAA GGCTAGCTACAACGA CAAATGGG	15283
2479	AUUUGAUU G CGAAGGAG	6535	CTCCTTCG GGCTAGCTACAACGA AATCAAT	15284
2470	CGAAGGAG A CAACCGCU	6536	AGCGGTTG GGCTAGCTACAACGA CTCCTTCG	15285
2467	AGGAGACA A CCGCUGAC	6537	GTCAGCGG GGCTAGCTACAACGA TGTCTCCT	15286
2464	AGACAACC G CUGACCCU	6538	AGGGTCAG GGCTAGCTACAACGA GGTGTCT	15287
2460	AACCGCUG A CCUACAC	6539	GTGTAGGG GGCTAGCTACAACGA CAGCGGTT	15288
2455	CUGACCCU A CACCGUAC	6540	GTACGGTG GGCTAGCTACAACGA AGGGTCAG	15289
2453	GACCCUAC A CCGUACAG	6541	CTGTACGG GGCTAGCTACAACGA GTAGGGTC	15290
2450	CCUACACC G UACAGGUA	6542	TACCTGTA GGCTAGCTACAACGA GGTGTAGG	15291
2448	UACACCGU A CAGGUAAU	6543	AATACCTG GGCTAGCTACAACGA ACGGTGTA	15292
2444	CCGUACAG G UAUUGCAC	6544	TGCAATA GGCTAGCTACAACGA CTGTACGG	15293
2442	GUACAGGU A UUGCACGU	6545	ACGTGCAA GGCTAGCTACAACGA ACCTGTAC	15294

2439	CAGGUAUU G CACGUCCA	6546	TGGACGTG GGCTAGCTACAACGA AATACCTG	15295
2437	GGUAUUGC A CGUCCACG	6547	CGTGGACG GGCTAGCTACAACGA GCAATACC	15296
2435	UAUUGCAC G UCCACGAU	6548	ATCGTGGG GGCTAGCTACAACGA GTGCAATA	15297
2431	GCACGUCC A CGAUGUUC	6549	GAACATCG GGCTAGCTACAACGA GGACGTGC	15298
2428	CGUCCACG A UGUUCUGG	6550	CCAGAACA GGCTAGCTACAACGA CGTGGACG	15299
2426	UCCACGAU G UUCUGGUG	6551	CACCAGAA GGCTAGCTACAACGA ATCGTGGA	15300
2420	AUGUUCUG G UGGAGAUG	6552	CATCTCCA GGCTAGCTACAACGA CAGACAT	15301
2414	UGGUGGAG A UGGAUCAA	6553	TTGATCCA GGCTAGCTACAACGA CTCCACCA	15302
2410	GGAGAUAG A UCAAACCA	6554	TGGTTTGA GGCTAGCTACAACGA CCATCTCC	15303
2405	UGGAUCAA A CCAGUGGA	6555	TCCACTGG GGCTAGCTACAACGA TTGATCCA	15304
2401	UCAAACCA G UGGACAGA	6556	TCTGTCCA GGCTAGCTACAACGA TGGTTTGA	15305
2397	ACCAGUGG A CAGAGCCG	6557	CGGCTCTG GGCTAGCTACAACGA CCATGGGT	15306
2392	UGGACAGA G CCGGUAGG	6558	CCTACCGG GGCTAGCTACAACGA TCTGTCCA	15307
2388	CAGAGCCG G UAGGGUGG	6559	CCACCCTA GGCTAGCTACAACGA CGGCTCTG	15308
2383	CCGUAGG G UGGUGAAG	6560	CTTACCCA GGCTAGCTACAACGA CCTACCGG	15309
2380	GUAGGGUG G UGAAGGAG	6561	CTCCTTCA GGCTAGCTACAACGA CACCCTAC	15310
2372	GUGAAGGA G CAGGGCAG	6562	ATGCCCTG GGCTAGCTACAACGA TCCTTCAC	15311
2367	GGAGCAGG G CAGUAUUU	6563	AAATACTG GGCTAGCTACAACGA CCTGTCTC	15312
2364	GCAGGGCA G UAUUUGCC	6564	GGCAAATA GGCTAGCTACAACGA TGCCCTGC	15313
2362	AGGGCAGU A UUUGCCAC	6565	GTGGCAAA GGCTAGCTACAACGA ACTGCCCT	15314
2358	CAGUAUUU G CCACUCUG	6566	CAGAGTGG GGCTAGCTACAACGA AAATACTG	15315
2355	UAUUUGCC A CUCUGUAG	6567	CTACAGAG GGCTAGCTACAACGA GGCAAATA	15316
2350	GCCACUCU G UAGUGGAC	6568	GTCCACTA GGCTAGCTACAACGA AGAGTGGC	15317
2347	ACUCUGUA G UGGACAAC	6569	GTTGTCCA GGCTAGCTACAACGA TACAGAGT	15318
2343	UGUAGUGG A CAACAGCA	6570	TGCTGTTG GGCTAGCTACAACGA CCACTACA	15319
2340	AGUGGACA A CAGCAGCG	6571	CGTGCTGT GGCTAGCTACAACGA TGTCCACT	15320
2337	GGACAACA G CAGCGGGC	6572	GCCGCTGT GGCTAGCTACAACGA TGTGTCTC	15321
2334	CAACAGCA G CGGGCUGA	6573	TCAGCCCG GGCTAGCTACAACGA TGTGTTG	15322
2330	AGCAGCGG G CUGAGCUC	6574	GAGCTCAG GGCTAGCTACAACGA CCGCTGCT	15323
2325	CGGGCUGA G CUCUGAUC	6575	GATCAGAG GGCTAGCTACAACGA TCAGCCCG	15324
2319	GAGCUCUG A UCUGUCC	6576	GGGACAGA GGCTAGCTACAACGA CAGAGCTC	15325
2315	UCUGAUCU G UCCCUGUC	6577	GACAGGGA GGCTAGCTACAACGA AGATCAGA	15326
2309	CUGUCCCU G UCCUCCAA	6578	TTGGAGGA GGCTAGCTACAACGA AGGGACAG	15327
2300	UCCUCCAA A UCACAACG	6579	CGTTGTGA GGCTAGCTACAACGA TTGGAGGA	15328
2297	UCCAAUUC A CAACGCUC	6580	GAGCGTTG GGCTAGCTACAACGA GATTGGGA	15329
2294	AAAUCAAC A CGCUCUCC	6581	GGAGAGCG GGCTAGCTACAACGA TGTGATTT	15330
2292	AUCACAAC G CUCUCCUC	6582	GAGGAGAG GGCTAGCTACAACGA GTTGTGAT	15331
2281	CUCCUCGA G UCCAAUUG	6583	CAATTGGA GGCTAGCTACAACGA TCGAGGAG	15332
2276	CGAGUCCA A UUGCAUGC	6584	GCATGCAA GGCTAGCTACAACGA TGGACTCG	15333
2273	GUCCAAUU G CAUGCGGC	6585	GCCGCATG GGCTAGCTACAACGA AATTGGAC	15334
2271	CCAAUUGC A UGCGGCGG	6586	CCGCCGGA GGCTAGCTACAACGA GCAATTGG	15335
2269	AAUUGCAU G CGGCGGUG	6587	CACCGCCG GGCTAGCTACAACGA ATGCAATT	15336
2266	UGCAUGCG G CGGUGAGC	6588	GCTCACCG GGCTAGCTACAACGA CGCATGCA	15337
2263	AUGCGGCG G UGAGCCUG	6589	CAGGCTCA GGCTAGCTACAACGA CGCCGCAT	15338
2259	GGCGGUGA G CCUGUGCU	6590	AGCACAGG GGCTAGCTACAACGA TCACCGCC	15339
2255	GUGAGCCU G UGCUCCAC	6591	GTGGAGCA GGCTAGCTACAACGA AGGCTCAC	15340
2253	GAGCCUGU G CUCCACGC	6592	GCGTGGAG GGCTAGCTACAACGA ACAGGCTC	15341
2248	UGUGCUCC A CGCCCCC	6593	GGGGGGCG GGCTAGCTACAACGA GGAGCACA	15342
2246	UGCUCAC G CCCCCAC	6594	GTGGGGGG GGCTAGCTACAACGA GTGGAGCA	15343
2239	CGCCCCC A CAUACAUC	6595	GATGTATG GGCTAGCTACAACGA GGGGGGCG	15344
2237	CCCCCAC A UACAUCCU	6596	AGGATATG GGCTAGCTACAACGA GTGGGGGG	15345
2235	CCCCACAU A CAUCCUAA	6597	TTAGGATG GGCTAGCTACAACGA ATGTGGGG	15346
2233	CCACAUAC A UCCUAACC	6598	GGTTAGGA GGCTAGCTACAACGA GTATGTGG	15347
2227	ACAUCCUA A CCUAAAG	6599	CTTTAAGG GGCTAGCTACAACGA TAGGATGT	15348
2218	CCUAAAG A UGGAAAAA	6600	TTTTTCCA GGCTAGCTACAACGA CTTTAAGG	15349
2210	AUGGAAAA A UUGACAGU	6601	ACTGTCAA GGCTAGCTACAACGA TTTTCCAT	15350

2206	AAAAAUUG A CAGUGCAG	6602	CTGCACTG GGCTAGCTACAACGA CAATTTT	15351
2203	AAUUGACA G UGCAGGGG	6603	CCCCTGCA GGCTAGCTACAACGA TGTCAATT	15352
2201	UUGACAGU G CAGGGGUA	6604	TACCCCTG GGCTAGCTACAACGA ACTGTCAA	15353
2195	GUGCAGGG G UAGUGCCA	6605	TGGCACTA GGCTAGCTACAACGA CCTGTCAC	15354
2192	CAGGGGUA G UGCCAAAG	6606	CTTTGGCA GGCTAGCTACAACGA TACCCCTG	15355
2190	GGGGUAGU G CCAAAGCC	6607	GGCTTTGG GGCTAGCTACAACGA ACTACCCC	15356
2184	GUGCCAAA G CCUGUAUG	6608	CATACAGG GGCTAGCTACAACGA TTTGGCAC	15357
2180	CAAAGCCU G UAUGGGUA	6609	TACCCATA GGCTAGCTACAACGA AGGCTTTG	15358
2178	AAGCCUGU A UGGGUAGU	6610	ACTACCCA GGCTAGCTACAACGA ACAGGCTT	15359
2174	CUGUAUGG G UAGUCAAC	6611	GTTGACTA GGCTAGCTACAACGA CCATACAG	15360
2171	UAUGGGUA G UCAACUAU	6612	ATAGTTGA GGCTAGCTACAACGA TACCCATA	15361
2167	GGUAGUCA A CUAUGCAU	6613	ATGCATGA GGCTAGCTACAACGA TGACTACC	15362
2164	AGUCAACU A UGCAUCUA	6614	TAGATGCA GGCTAGCTACAACGA AGTTGACT	15363
2162	UCAACUAU G CAUCUAGG	6615	CCTAGATG GGCTAGCTACAACGA ATAGTTGA	15364
2160	AACUAUGC A UCUAGGUG	6616	CACCTAGA GGCTAGCTACAACGA GCATAGTT	15365
2154	GCAUCUAG G UGUUAACC	6617	GGTTAACA GGCTAGCTACAACGA CTAGATGC	15366
2152	AUCUAGGU G UUAACCAA	6618	TTGGTTAA GGCTAGCTACAACGA ACCTAGAT	15367
2148	AGGUGUUA A CCAAGGCC	6619	GGCCTTGG GGCTAGCTACAACGA TAACACCT	15368
2142	UAACCAAG G CCCGAAC	6620	GTTCCGGG GGCTAGCTACAACGA CTTGGTTA	15369
2135	GGCCCCGA A CCGCACUU	6621	AAGTGCGG GGCTAGCTACAACGA TCGGGGCC	15370
2132	CCCGAACC G CACUUGC	6622	GCAAAGTG GGCTAGCTACAACGA GGTTCGGG	15371
2130	CGAACC GC A CUUUGCGU	6623	ACGCAAAG GGCTAGCTACAACGA GCGGTTCC	15372
2125	CGCACUUU G CGUAAGUG	6624	CACTTACG GGCTAGCTACAACGA AAAGTGCG	15373
2123	CACUUGC G UAAGUGGC	6625	GCCACTTA GGCTAGCTACAACGA GCAAAGTG	15374
2119	UUGCGUAA G UGGCCUCG	6626	CGAGGCCA GGCTAGCTACAACGA TTACGCAA	15375
2116	CGUAAGUG G CCUCGGGG	6627	CCCCGAGG GGCTAGCTACAACGA CACTTACG	15376
2108	GCCUCGGG G UGCUUCCG	6628	CGGAAGCA GGCTAGCTACAACGA CCCGAGGC	15377
2106	CUCGGGGU G CUUCCGGA	6629	TCCGGAAG GGCTAGCTACAACGA ACCCCGAG	15378
2096	UUCCGGAA G CAGUCCGU	6630	ACGGATG GGCTAGCTACAACGA TTCCGGAA	15379
2093	CGGAAGCA G UCCGUGGG	6631	CCCACGGA GGCTAGCTACAACGA TGCTTCCG	15380
2089	AGCAGUCC G UGGGGCAG	6632	CTGCCCCA GGCTAGCTACAACGA GGA CTGCT	15381
2084	UCCGUGGG G CAGGUUAA	6633	TTAACTTG GGCTAGCTACAACGA CCCACGGA	15382
2080	UGGGGCAG G UUAAGGUG	6634	CACCTTAA GGCTAGCTACAACGA CTGCCCCA	15383
2074	AGGUUAAG G UGUCGUUA	6635	TAACGACA GGCTAGCTACAACGA CTTAACCT	15384
2072	GUUAAGGU G UCGUUAAC	6636	GGTAACGA GGCTAGCTACAACGA ACCTTAAC	15385
2069	AAGGUGUC G UUACCGG	6637	GCCGGTAA GGCTAGCTACAACGA GACACCTT	15386
2066	GUGUCGUU A CCGCCCC	6638	GGGGCCGG GGCTAGCTACAACGA AACGACAC	15387
2062	CGUUACCG G CCCCCCG	6639	CGGGGGGG GGCTAGCTACAACGA CGGTACACG	15388
2053	CCCCCCCG A UGUUGCAC	6640	GTGCAACA GGCTAGCTACAACGA CGGGGGGG	15389
2051	CCCCCGAU G UUGCACGG	6641	CCGTGCAA GGCTAGCTACAACGA ATCGGGGG	15390
2048	CCGAUGUU G CACGGGGG	6642	CCCCCGTG GGCTAGCTACAACGA AACATCGG	15391
2046	GAUGUUGC A CGGGGGGC	6643	GCCCCCGG GGCTAGCTACAACGA GCAACATC	15392
2039	CACGGGGG G CCCCCGCA	6644	TGCGGGGG GGCTAGCTACAACGA CCCCCGTG	15393
2033	GGGCCCCC G CACGUCUU	6645	AAGACGTG GGCTAGCTACAACGA GGGGGCCC	15394
2031	GCCCCCGC A CGUCUUGG	6646	CCAAGACG GGCTAGCTACAACGA GCGGGGGC	15395
2029	CCCCGCAC G UCUUGGUG	6647	CACCAAGA GGCTAGCTACAACGA GTGCGGGG	15396
2023	ACGUCUUG G UGAACCCA	6648	TGGGTTCA GGCTAGCTACAACGA CAAGACGT	15397
2019	CUUGGUGA A CCCAGUGC	6649	GCACTGGG GGCTAGCTACAACGA TCACCAAG	15398
2014	UGAACCCA G UGCAUUC	6650	GAATGGCA GGCTAGCTACAACGA TGGGTTCA	15399
2012	AACCCAGU G CCAUUCAU	6651	ATGAATGG GGCTAGCTACAACGA ACTGGGTT	15400
2009	CCAGUGCC A UUCAUCCA	6652	TGGATGAA GGCTAGCTACAACGA GGCACCTG	15401
2005	UGCAUUC A UCCAUGUG	6653	CACATGGA GGCTAGCTACAACGA GAATGGCA	15402
2001	AUUCAUCC A UGUGCAGC	6654	GCTGCACA GGCTAGCTACAACGA GGATGAAT	15403
1999	UCAUCCAU G UGCAGCCG	6655	CGGTGACA GGCTAGCTACAACGA ATGGATGA	15404
1997	AUCCAUGU G CAGCCGAA	6656	TTCGGCTG GGCTAGCTACAACGA ACATGGAT	15405
1994	CAUGUGCA G CCGAACCA	6657	TGGTTCGG GGCTAGCTACAACGA TGCACATG	15406

1989	GCAGCCGA A CCAGUUGC	6658	GCAACTGG GGCTAGCTACAACGA TCGGCTGC	15407
1985	CCGAACCA G UUGCCUUG	6659	CAAGGCAA GGCTAGCTACAACGA TGGTTCGG	15408
1982	AACCAGUU G CCUUGCGG	6660	CCGCAAGG GGCTAGCTACAACGA AACTGGTT	15409
1977	GUUGCCUU G CGGCGGCC	6661	GGCCGCCG GGCTAGCTACAACGA AAGGCAAC	15410
1974	GCCUUGCG G CGGCGCG	6662	CGCGGCCG GGCTAGCTACAACGA CGCAAGGC	15411
1971	UUGCGGCG G CCGCGUGU	6663	ACACGCGG GGCTAGCTACAACGA CGCCGCAA	15412
1968	CGGCGGCC G CGUGUGU	6664	ACAACACG GGCTAGCTACAACGA GGCCGCCG	15413
1966	GCGGCCGC G UGUUGUUG	6665	CAACAACA GGCTAGCTACAACGA GCGGCCGC	15414
1964	GGCCGCGU G UUGUUGAG	6666	CTCAACAA GGCTAGCTACAACGA ACGCGGCC	15415
1961	CGCGUGUU G UUGAGGAG	6667	CTCTCAA GGCTAGCTACAACGA AACACGCG	15416
1953	GUUGAGGA G CAGCACGU	6668	ACGTGCTG GGCTAGCTACAACGA TCCTCAAC	15417
1950	GAGGAGCA G CACGUCCG	6669	CGGACGTG GGCTAGCTACAACGA TGCTCCTC	15418
1948	GGAGCAGC A CGUCCGUC	6670	GACGGACG GGCTAGCTACAACGA GCTGCTCC	15419
1946	AGCAGCAC G UCCGUCUC	6671	GAGACGGA GGCTAGCTACAACGA GTGCTGCT	15420
1942	GCACGUCC G UCUGGUUC	6672	GAACGAGA GGCTAGCTACAACGA GGACGTGC	15421
1937	UCCGUUCU G UUCGCCCC	6673	GGGGCGAA GGCTAGCTACAACGA GAGACGGA	15422
1933	UCUCGUUC G CCCCCCAG	6674	CTGGGGGG GGCTAGCTACAACGA GAACGAGA	15423
1925	GCCCCCA G UUAUACGU	6675	ACGTATAA GGCTAGCTACAACGA TGGGGGGG	15424
1922	CCCCGUU A UACGUGGG	6676	CCCACGTA GGCTAGCTACAACGA AACTGGGG	15425
1920	CCAGUUAU A CGUGGGGG	6677	CCCCACG GGCTAGCTACAACGA ATAAGTGG	15426
1918	AGUUAUAC G UGGGGGCG	6678	CGCCCCCA GGCTAGCTACAACGA GTATAACT	15427
1912	ACGUGGGG G CGCCGAAA	6679	TTTCGGCG GGCTAGCTACAACGA CCCCACGT	15428
1910	GUGGGGGC G CCGAAACG	6680	CGTTTCGG GGCTAGCTACAACGA GCCCCAC	15429
1904	GCGCCGAA A CGGUCGGU	6681	ACCGACCG GGCTAGCTACAACGA TTCGGCGC	15430
1901	CCGAAACG G UCGGUCGU	6682	ACGACCGA GGCTAGCTACAACGA CGTTTCGG	15431
1897	AACGGUCG G UCGUCCCC	6683	GGGGACGA GGCTAGCTACAACGA CGACCGTT	15432
1894	GGUCGGUC G UCCCCACC	6684	GGTGGGGA GGCTAGCTACAACGA GACCGACC	15433
1888	UCGUCCCC A CCACAACA	6685	TGTTGTGG GGCTAGCTACAACGA GGGGACGA	15434
1885	UCCCCACC A CAACAGGG	6686	CCCTGTTG GGCTAGCTACAACGA GGTGGGGA	15435
1882	CCACCACA A CAGGGCUU	6687	AAGCCCTG GGCTAGCTACAACGA TGTGGTGG	15436
1877	ACAACAGG G CUUGGGGU	6688	ACCCCAAG GGCTAGCTACAACGA CCTGTGTG	15437
1870	GGCUUGGG G UGAAGCAA	6689	TTGCTTCA GGCTAGCTACAACGA CCAAGCC	15438
1865	GGGGUGAA G CAUACAC	6690	GTGTATTG GGCTAGCTACAACGA TTCACCCC	15439
1862	GUGAAGCA A UACACUGG	6691	CCAGTGTA GGCTAGCTACAACGA TGCTTCAC	15440
1860	GAAGCAAU A CACUGGAC	6692	GTCCAGTA GGCTAGCTACAACGA ATTGCTTC	15441
1858	AGCAAUAC A CUGGACCA	6693	TGGTCCAG GGCTAGCTACAACGA GTATTGCT	15442
1853	UACACUGG A CCACAUAC	6694	GTATGTGG GGCTAGCTACAACGA CCAGTGTA	15443
1850	ACUGGACC A CAUACCUG	6695	CAGGTATG GGCTAGCTACAACGA GGTCCAGT	15444
1848	UGGACCAC A UACCUGCG	6696	CGCAGGTA GGCTAGCTACAACGA GTGGTCCA	15445
1846	GACCACAU A CCUGCGAU	6697	ATCGCAGG GGCTAGCTACAACGA ATGTGGTC	15446
1842	ACAUACCU G CGAUGCGG	6698	CCGCATCG GGCTAGCTACAACGA AGGTATGT	15447
1839	UACCUGCG A UGCGGGUA	6699	TACCCGCA GGCTAGCTACAACGA CGCAGGTA	15448
1837	CCUGCGAU G CGGGUACG	6700	CGTACCCG GGCTAGCTACAACGA ATCGCAGG	15449
1833	CGAUGCGG G UACGAUAC	6701	GTATCGTA GGCTAGCTACAACGA CCGCATCG	15450
1831	AUGCGGGU A CGAUACCA	6702	TGGTATCG GGCTAGCTACAACGA ACCCGCAT	15451
1828	CGGGUACG A UACCACAC	6703	GTGTGGTA GGCTAGCTACAACGA CGTACCCG	15452
1826	GGUACGAU A CCACACGG	6704	CCGTGTGG GGCTAGCTACAACGA ATCGTACC	15453
1823	ACGAUACC A CACGGCCG	6705	CGGCCGTG GGCTAGCTACAACGA GGTATCGT	15454
1821	GAUACCAC A CGGCCGCG	6706	CGCGGCCG GGCTAGCTACAACGA GTGGTATC	15455
1818	ACCACACG G CCGCGGUG	6707	CACCGCGG GGCTAGCTACAACGA CGTGTGGT	15456
1815	ACACGGCC G CGGUGCGU	6708	ACGCAACG GGCTAGCTACAACGA GGCCGTGT	15457
1812	CGGCCGCG G UGCGUAGU	6709	ACTACGCA GGCTAGCTACAACGA CCGGCCG	15458
1810	GCCGCGGU G CGUAGUGC	6710	GCACTACG GGCTAGCTACAACGA AC CGCGGC	15459
1808	CGCGGUGC G UAGUGCCA	6711	TGGCACTA GGCTAGCTACAACGA GCACCGCG	15460
1805	GGUGCGUA G UGCCAGCA	6712	TGCTGGCA GGCTAGCTACAACGA TACGCACC	15461
1803	UGCGUAGU G CCAGCAAU	6713	ATTGCTGG GGCTAGCTACAACGA ACTACGCA	15462

1799	UAGUGCCA G CAAUAGGG	6714	CCCTATTG GGCTAGCTACAACGA TGGCACTA	15463
1796	UGCCAGCA A UAGGGCCU	6715	AGGCCCTA GGCTAGCTACAACGA TGCTGGCA	15464
1791	GCAAUAGG G CCUCUGGU	6716	ACCAGAGG GGCTAGCTACAACGA CCTATTGC	15465
1784	GGCCUCUG G UCCGAGUU	6717	AACTCGGA GGCTAGCTACAACGA CAGAGGCC	15466
1778	UGGUCCGA G UUGUGGCC	6718	GGCCACAA GGCTAGCTACAACGA TCGGACCA	15467
1775	UCCGAGUU G UGGCCUC	6719	GAGGGCCA GGCTAGCTACAACGA AACTCGGA	15468
1772	GAGUUGUG G CCCUCGGU	6720	ACCGAGGG GGCTAGCTACAACGA CACAATC	15469
1765	GGCCUCUG G UGUAGGUG	6721	CACCTACA GGCTAGCTACAACGA CGAGGGCC	15470
1763	CCCUCGGU G UAGGUGAU	6722	ATCACCTA GGCTAGCTACAACGA ACCGAGGG	15471
1759	CGGUGUAG G UGAUAGGA	6723	TCCTATCA GGCTAGCTACAACGA CTACACCG	15472
1756	UGUAGGUG A UAGACCC	6724	GGGTCTTA GGCTAGCTACAACGA CACCTACA	15473
1751	GUGAUAGG A CCCACCC	6725	GGGTGGGG GGCTAGCTACAACGA CCTATCAC	15474
1746	AGGACCCC A CCCUGAG	6726	CTCAGGGG GGCTAGCTACAACGA GGGGTCCT	15475
1738	ACCCUGA G CGAACUUG	6727	CAAGTTCG GGCTAGCTACAACGA TCAGGGGT	15476
1734	CUGAGCGA A CUUGUCA	6728	TTGACAAG GGCTAGCTACAACGA TCGCTCAG	15477
1730	GCGAACUU G UCAAUGGA	6729	TCCATTGA GGCTAGCTACAACGA AAGTTCGC	15478
1726	ACUUGUCA A UGGAGCGG	6730	CCGCTCCA GGCTAGCTACAACGA TGACAAGT	15479
1721	UCAUUGGA G CGGAGCU	6731	AGCTGCCG GGCTAGCTACAACGA TCCATTGA	15480
1718	AUGGAGCG G CAGCUGGC	6732	GCCAGCTG GGCTAGCTACAACGA CGCTCCAT	15481
1715	GAGCGGCA G CUGGCCAA	6733	TTGGCCAG GGCTAGCTACAACGA TGCCGCTC	15482
1711	GGCAGCUG G CCAAGCGC	6734	GCGCTTGG GGCTAGCTACAACGA CAGGTGCC	15483
1706	CUGGCCAA G CGCUGUGG	6735	CCACAGCG GGCTAGCTACAACGA TGGGCCAG	15484
1704	GGCCAAGC G CUGUGGGC	6736	GCCCACAG GGCTAGCTACAACGA GCTTGGCC	15485
1701	CAAGCGCU G UGGCAUC	6737	GATGCCCA GGCTAGCTACAACGA AGCGCTTG	15486
1697	CGCUGUGG G CAUCCGGA	6738	TCCGATG GGCTAGCTACAACGA CCACAGCG	15487
1695	CUGUGGGC A UCCGACG	6739	CGTCCGGA GGCTAGCTACAACGA GCCACAG	15488
1689	GCAUCCGG A CGAGUUGA	6740	TCAACTCG GGCTAGCTACAACGA CCGGATGC	15489
1685	CCGGACGA G UUGAACCU	6741	AGGTTCAA GGCTAGCTACAACGA TCGTCCGG	15490
1680	CGAGUUGA A CCUGUGUG	6742	CACACAGG GGCTAGCTACAACGA TCAACTCG	15491
1676	UUGAACCU G UGUGCAUA	6743	TATGCACA GGCTAGCTACAACGA AGGTTCAA	15492
1674	GAACCUGU G UGCAUAGA	6744	TCTATGCA GGCTAGCTACAACGA ACAGGTTC	15493
1672	ACCUGUGU G CAUAGAAC	6745	GTTCTATG GGCTAGCTACAACGA ACACAGGT	15494
1670	CUGUGUGC A UAGAACAG	6746	CTGTTCTA GGCTAGCTACAACGA GCACACAG	15495
1665	UGCAUAGA A CAGUGCAG	6747	CTGCACTG GGCTAGCTACAACGA TCTATGCA	15496
1662	AUAGAACA G UGCAGCAA	6748	TTGCTGCA GGCTAGCTACAACGA TGTTCTAT	15497
1660	AGAACAGU G CAGCAAUG	6749	CATTGCTG GGCTAGCTACAACGA ACTGTTCT	15498
1657	ACAGUGCA G CAAUGAAC	6750	GTTCTATT GGCTAGCTACAACGA TGCACTGT	15499
1654	GUGCAGCA A UGAACCGG	6751	CGGGTTCA GGCTAGCTACAACGA TGCTGCAC	15500
1650	AGCAAUGA A CCCGGUUU	6752	AAACCGGG GGCTAGCTACAACGA TCAATGCT	15501
1645	UGAACCCG G UUUGGAGG	6753	CCTCCAAA GGCTAGCTACAACGA CGGGTTCA	15502
1634	UGGAGGGA G UCAUUGCA	6754	TGCAATGA GGCTAGCTACAACGA TCCCTCCA	15503
1631	AGGGAGUC A UUGCAGUU	6755	AACTGCAA GGCTAGCTACAACGA GACTCCCT	15504
1628	GAGUCAUU G CAGUUCAG	6756	CTGAATG GGCTAGCTACAACGA AATGACTC	15505
1625	UCAUUGCA G UUCAGGGC	6757	GCCCTGAA GGCTAGCTACAACGA TGCAATGA	15506
1618	AGUUCAGG G CAGUCCUG	6758	CAGCACTG GGCTAGCTACAACGA CCTGAACT	15507
1615	UCAGGGCA G UCCUGUUA	6759	TAACAGGA GGCTAGCTACAACGA TGCCCTGA	15508
1610	GCAGUCCU G UUAUUGUG	6760	CACATTAA GGCTAGCTACAACGA AGGACTGC	15509
1606	UCCUGUUA A UGUGCCAG	6761	CTGGCACA GGCTAGCTACAACGA TAACAGGA	15510
1604	CUGUUAU G UGCCAGCU	6762	AGCTGGCA GGCTAGCTACAACGA ATTAACAG	15511
1602	GUUAUUGU G CCAGCUGC	6763	GCAGCTGG GGCTAGCTACAACGA ACATTAAC	15512
1598	AUGUGCCA G CUGCCGUU	6764	AACGGCAG GGCTAGCTACAACGA TGGCACAT	15513
1595	UGCCAGCU G CCGUUGGU	6765	ACCAACGG GGCTAGCTACAACGA AGCTGGCA	15514
1592	CAGCUGCC G UUGUGUUU	6766	AACACCAA GGCTAGCTACAACGA GGCAGCTG	15515
1588	UGCCGUUG G UGUUAUA	6767	TATTAACA GGCTAGCTACAACGA CAACGGCA	15516
1586	CCGUUGGU G UUAUAAG	6768	CTTATTAA GGCTAGCTACAACGA ACCAACGG	15517
1582	UGGUGUUA A UAAGCUGG	6769	CCAGCTTA GGCTAGCTACAACGA TAACACCA	15518



1578	GUUAAUAA G CUGGAUUAU	6770	ATATCCAG GGCTAGCTACAACGA TTATTAAC	15519
1573	UAAGCUGG A UAUUCUGA	6771	TCAGAATA GGCTAGCTACAACGA CCAGCTTA	15520
1571	AGCUGGAU A UUCUGAGA	6772	TCTCAGAA GGCTAGCTACAACGA ATCCAGCT	15521
1563	AUUCUGAG A UGCUCCAG	6773	CTGGAGCA GGCTAGCTACAACGA CTCAGAAT	15522
1561	UCUGAGAU G CUCCAGAU	6774	ATCTGGAG GGCTAGCTACAACGA ATCTCAGA	15523
1554	UGCUCAG A UGUAAAGA	6775	TCTTTACA GGCTAGCTACAACGA CTGGAGCA	15524
1552	CUCCAGAU G UAAAGAGG	6776	CCTCTTTA GGCTAGCTACAACGA ATCTGGAG	15525
1542	AAAGAGGG A UGCCACCC	6777	GGGTGGCA GGCTAGCTACAACGA CCCTCTTT	15526
1540	AGAGGGAU G CCACCCUA	6778	TAGGGTGG GGCTAGCTACAACGA ATCCCTCT	15527
1537	GGGAUGCC A CCCUACUA	6779	TAGTAGGG GGCTAGCTACAACGA GGCATCCC	15528
1532	GCCACCCU A CUAGUGGU	6780	ACCACTAG GGCTAGCTACAACGA AGGGTGGC	15529
1528	CCCUACUA G UGGUGUGG	6781	CCACACCA GGCTAGCTACAACGA TAGTAGGG	15530
1525	UACUAGUG G UGUGGCCC	6782	GGGCCACA GGCTAGCTACAACGA CACTAGTA	15531
1523	CUAGUGGU G UGGCCCUG	6783	CAGGGCCA GGCTAGCTACAACGA ACCACTAG	15532
1520	GUGGUGUG G CCCUGCGC	6784	GCGCAGGG GGCTAGCTACAACGA CACACCAC	15533
1515	GUGGCCCC G CGCCCCC	6785	GGGGGGCG GGCTAGCTACAACGA AGGGCCAC	15534
1513	GGCCCCGC G CCCCCCU	6786	AGGGGGGG GGCTAGCTACAACGA GCAGGGCC	15535
1504	CCCCCCC G UCGUGUAG	6787	CTACACGA GGCTAGCTACAACGA AGGGGGGG	15536
1501	CCCCUGUC G UGUAGGUG	6788	CACCTACA GGCTAGCTACAACGA GACAGGGG	15537
1499	CCUGUCGU G UAGGUGUC	6789	GACACCTA GGCTAGCTACAACGA ACAGCAGG	15538
1495	UCGUGUAG G UGUCCCCG	6790	CGGGGACA GGCTAGCTACAACGA CTACACGA	15539
1493	GUGUAGGU G UCCCCGUC	6791	GACGGGGA GGCTAGCTACAACGA ACCTACAC	15540
1487	GUGUCCCC G UCAACGCC	6792	GGCGTTGA GGCTAGCTACAACGA GGGGACAC	15541
1483	CCCCGUCA A CGCCGGCA	6793	TGCCGGCG GGCTAGCTACAACGA TGACGGGG	15542
1481	CCGUCAAC G CCGGCAA	6794	TTTGCCGG GGCTAGCTACAACGA GTTGACGG	15543
1477	CAACGCCG G CAAAGAGU	6795	ACTCTTTG GGCTAGCTACAACGA CGGCGTTG	15544
1470	GGCAAAGA G UAGCAUCA	6796	TGATGCTA GGCTAGCTACAACGA TCTTTGCC	15545
1467	AAAGAGUA G CAUCACAA	6797	TTGTGATG GGCTAGCTACAACGA TACTCTTT	15546
1465	AGAGUAGC A UCACAAUC	6798	GATTGTGA GGCTAGCTACAACGA GCTACTCT	15547
1462	GUAGCAUC A CAAUCAAC	6799	GTTGATTG GGCTAGCTACAACGA GATGCTAC	15548
1459	GCAUCACA A UCAACACC	6800	GGTGTGTA GGCTAGCTACAACGA TGTGATGC	15549
1455	CACAAUCA A CACCUUAG	6801	CTAAGGTG GGCTAGCTACAACGA TGATTGTG	15550
1453	CAAUCAAC A CCUAGCC	6802	GGCTAAGG GGCTAGCTACAACGA GTTGATTG	15551
1447	ACACGUUA G CACAGUUC	6803	GAACTGGG GGCTAGCTACAACGA TAAGGTGT	15552
1442	UUAGCCCA G UCCCCAC	6804	GTGGGGAA GGCTAGCTACAACGA TGGGTAAT	15553
1435	AGUUCCCC A CCAUGGAA	6805	TTCCATGG GGCTAGCTACAACGA GGGGAAT	15554
1432	UCCCCACC A UGGAAUAA	6806	TTATTCCA GGCTAGCTACAACGA GGTGGGGA	15555
1427	ACCAUGGA A UAAUAGGC	6807	GCCTATTA GGCTAGCTACAACGA TCCATGGT	15556
1424	AUGGAAUA A UAGGCAAG	6808	CTTGCCCTA GGCTAGCTACAACGA TATTCCAT	15557
1420	AAUAAUAG G CAAGGCC	6809	GGGCCTTG GGCTAGCTACAACGA CTATTATT	15558
1415	UAGGCAAG G CCCGCCAG	6810	CTGGCGGG GGCTAGCTACAACGA CTGCGCTA	15559
1411	CAAGGCC G CCAGGACU	6811	AGTCCTGG GGCTAGCTACAACGA GGGCCTTG	15560
1405	CCGCCAGG A CUCCCCAG	6812	CTGGGGAG GGCTAGCTACAACGA CCTGGCGG	15561
1397	ACUCCCCA G UGGGCCCC	6813	GGGGCCCA GGCTAGCTACAACGA TGGGGAGT	15562
1393	CCCAGUGG G CCCCCGCC	6814	GGCGGGGG GGCTAGCTACAACGA CCACTGGG	15563
1387	GGGCCCCC G CCACCAUG	6815	CATGGTGG GGCTAGCTACAACGA GGGGGCCC	15564
1384	CCCCCGCC A CCAUGUCC	6816	GGACATGG GGCTAGCTACAACGA GCGGGGGG	15565
1381	CCGCCACC A UGUCCACG	6817	CGTGGACA GGCTAGCTACAACGA GGTGGCGG	15566
1379	GCCACCAU G UCCACGAC	6818	GTCGTGGA GGCTAGCTACAACGA ATGGTGGC	15567
1375	CCAUGUCC A CGACGGCU	6819	AGCCGTGG GGCTAGCTACAACGA GGACATGG	15568
1372	UGUCCACG A CGGCUUGU	6820	ACAAGCCG GGCTAGCTACAACGA CGTGGACA	15569
1369	CCACGACG G CUUGUGGG	6821	CCCACAAG GGCTAGCTACAACGA CGTGTGG	15570
1365	GACGGCUU G UGGGAUCC	6822	GGATCCCA GGCTAGCTACAACGA AAGCCGTC	15571
1360	CUUGUGGG A UCCGGAGC	6823	GCTCCGGA GGCTAGCTACAACGA CCCACAAG	15572
1353	GAUCCGGA G CAACUGCG	6824	CGCAGTTG GGCTAGCTACAACGA TCCGGATC	15573
1350	CCGGAGCA A CUGCGAUA	6825	TATCGCAG GGCTAGCTACAACGA TGCTCCGG	15574



1347	GAGCAACU G CGAUACCA	6826	TGGTATCG GGCTAGCTACAACGA AGTTGCTC	15575
1344	CAACUGCG A UACCACUA	6827	TAGTGGTA GGCTAGCTACAACGA CGCAGTTG	15576
1342	ACUGCGAU A CCACUAGG	6828	CCTAGTGG GGCTAGCTACAACGA ATCGCAGT	15577
1339	GCGAUACC A CUAGGGCU	6829	AGCCCTAG GGCTAGCTACAACGA GGTATCGC	15578
1333	CCACUAGG G CUGUUGUA	6830	TACAACGA GGCTAGCTACAACGA CCTAGTGG	15579
1330	CUAGGGCU G UUGUAGGU	6831	ACCTACAA GGCTAGCTACAACGA AGCCCTAG	15580
1327	GGGCGUUG G UAGGUGAC	6832	GTCACCTA GGCTAGCTACAACGA AACAGCCC	15581
1323	UGUUGUAG G UGACCAAU	6833	ATTGGTCA GGCTAGCTACAACGA CTACAACA	15582
1320	UGUAGGUG A CCAAUUCA	6834	TGAATTGG GGCTAGCTACAACGA CACCTACA	15583
1316	GGUGACCA A UUCAUCAU	6835	ATGATGAA GGCTAGCTACAACGA TGGTCACC	15584
1312	ACCAAUUC A UCAUCAUA	6836	TATGATGA GGCTAGCTACAACGA GAATTGGT	15585
1309	AAUUCAUC A UCAUAUCC	6837	GGATATGA GGCTAGCTACAACGA GATGAATT	15586
1306	UCAUCAUC A UAUCCCAA	6838	TTGGGATA GGCTAGCTACAACGA GATGATGA	15587
1304	AUCAUCAU A UCCCAAGC	6839	GCTTGGGA GGCTAGCTACAACGA ATGATGAT	15588
1297	UAUCCCAA G CCAUGCGA	6840	TCGATGGG GGCTAGCTACAACGA TTGGGATA	15589
1294	CCCAAGCC A UGCGAUGG	6841	CCATCGCA GGCTAGCTACAACGA GGCTTGGG	15590
1292	CAAGCCAU G CGAUGGCC	6842	GGCCATCG GGCTAGCTACAACGA ATGGCTTG	15591
1289	GCCAUGCG A UGGCCUGA	6843	TCAGGCCA GGCTAGCTACAACGA CGCATGGC	15592
1286	AUGCGAUG G CCUGAUAC	6844	GTATCAGG GGCTAGCTACAACGA CATCGCAT	15593
1281	AUGGCCUG A UACGUGGC	6845	GCCACGTA GGCTAGCTACAACGA CAGGCCAT	15594
1279	GGCCUGAU A CGUGGCCG	6846	CGGCCACG GGCTAGCTACAACGA ATCAGGCC	15595
1277	CCUGAUAC G UGGCCGGG	6847	CCCGGCCA GGCTAGCTACAACGA GTATCAGG	15596
1274	GAUACGUG G CCGGGAUA	6848	TATCCCGG GGCTAGCTACAACGA CACGTATC	15597
1268	UGGCCGGG A UAGAUCGA	6849	TCGATCTA GGCTAGCTACAACGA CCCGGCCA	15598
1264	CGGGAUAG A UCGAGCAA	6850	TTGCTCGA GGCTAGCTACAACGA CTATCCCG	15599
1259	UAGAUCGA G CAAUUAUA	6851	TGTAATTG GGCTAGCTACAACGA TCGATCTA	15600
1256	AUCGAGCA A UUACAGUC	6852	GACTGTAA GGCTAGCTACAACGA TGCTCGAT	15601
1253	GAGCAAUU A CAGUCCUG	6853	CAGGACTG GGCTAGCTACAACGA AATTGCTC	15602
1250	CAAUUAUA G UCCUGUAC	6854	GTACAGGA GGCTAGCTACAACGA TGTAATTG	15603
1245	ACAGUCCU G UACUGUCU	6855	AGACAGTA GGCTAGCTACAACGA AGGACTGT	15604
1243	AGUCCUGU A CUGUCUA	6856	TGAGACGA GGCTAGCTACAACGA ACAGGACT	15605
1240	CCUGUACU G UCUCAUAC	6857	GTATGAGA GGCTAGCTACAACGA AGTACAGG	15606
1235	ACUGUCUC A UACCGGCG	6858	CGCCGGTA GGCTAGCTACAACGA GAGACAGT	15607
1233	UGUCUCAU A CCGGCGAG	6859	CTCGCCGG GGCTAGCTACAACGA ATGAGACA	15608
1229	UCAUACCG G CGAGGCGA	6860	TCGCCTCG GGCTAGCTACAACGA CGGTATGA	15609
1224	CCGCGGAG G CGAGAAGG	6861	CTTCTCTG GGCTAGCTACAACGA CTCGCCGG	15610
1216	GCGAGAAG G UGAACAGC	6862	GCTGTTCA GGCTAGCTACAACGA CTTCTCGC	15611
1212	GAAGGUGA A CAGCUGAG	6863	CTCAGCTG GGCTAGCTACAACGA TCACCTTC	15612
1209	GGUGAACA G CUGAGAGA	6864	TCTCTCAG GGCTAGCTACAACGA TGTTCACC	15613
1201	GCUGAGAG A CGAGGAAG	6865	CTTCTCTG GGCTAGCTACAACGA CTCTCAGC	15614
1192	CGAGGAAG A CAGAUCCG	6866	CGGATCTG GGCTAGCTACAACGA CTTCTCTG	15615
1188	GAAGACAG A UCCGCAGA	6867	TCTGCGGA GGCTAGCTACAACGA CTGTCTTC	15616
1184	ACAGAUCC G CAGAGAUC	6868	GATCTCTG GGCTAGCTACAACGA GGATCTGT	15617
1178	CCGCAGAG A UCCCCCAC	6869	GTGGGGGA GGCTAGCTACAACGA CTCTGCGG	15618
1171	GAUCCCCC A CGUACAUA	6870	TATGTACG GGCTAGCTACAACGA GGGGGATC	15619
1169	UCCCCCAC G UACAUAGC	6871	GCTATGTA GGCTAGCTACAACGA GTGGGGGA	15620
1167	CCCCACGU A CAUAGCAG	6872	CTGCTATG GGCTAGCTACAACGA ACGTGGGG	15621
1165	CCACGUAC A UAGCAGAG	6873	CTCTGCTA GGCTAGCTACAACGA GTACGTGG	15622
1162	CGUACAUA G CAGAGCAG	6874	CTGCTCTG GGCTAGCTACAACGA TATGTACG	15623
1157	AUAGCAGA G CAGAAAGC	6875	GCTTTCTG GGCTAGCTACAACGA TCTGCTAT	15624
1150	AGCAGAAA G CAGCCGCC	6876	GGCGGCTG GGCTAGCTACAACGA TTTCTGCT	15625
1147	AGAAAGCA G CCGCCCA	6877	TGGGGCGG GGCTAGCTACAACGA TGCTTTCT	15626
1144	AAGCAGCC G CCCCACG	6878	CGTTGGGG GGCTAGCTACAACGA GGCTGCTT	15627
1138	CCGCCCA A CGAGCAA	6879	TTTGCTCG GGCTAGCTACAACGA TGGGGCGG	15628
1134	CCCAACGA G CAAUUCGA	6880	TCGATTGG GGCTAGCTACAACGA TCGTTGGG	15629
1130	ACGAGCAA A UGACGUG	6881	CACGTCGA GGCTAGCTACAACGA TTGCTCGT	15630

1126	GCAAAUCG A CGUGACGC	6882	GCGTCACG GGCTAGCTACAACGA CGATTTCG	15631
1124	AAAUCGAC G UGACGCCG	6883	CGGCGTCA GGCTAGCTACAACGA GTCGATTT	15632
1121	UCGACGUG A CGCCGUAU	6884	ATACGGCG GGCTAGCTACAACGA CACGTCGA	15633
1119	GACGUGAC G CCGUAUCG	6885	CGATACGG GGCTAGCTACAACGA GTCACGTC	15634
1116	GUGACGCC G UAUCGUCC	6886	CGACGATA GGCTAGCTACAACGA GGCGTCAC	15635
1114	GACGCCGU A UCGUCGUA	6887	TACGACGA GGCTAGCTACAACGA ACGGCGTC	15636
1111	GCCGUUUC G UCGUAGUG	6888	CACCTACGA GGCTAGCTACAACGA GATACGGC	15637
1108	GUUUCGUC G UAGUGGGG	6889	CCCCACTA GGCTAGCTACAACGA GACGATAC	15638
1105	UCGUCGUA G UGGGGAUG	6890	CATCCCCA GGCTAGCTACAACGA TACGACGA	15639
1099	UAGUGGGG A UGCUGGCA	6891	TGCCAGCA GGCTAGCTACAACGA CCCCCTA	15640
1097	GUGGGGAU G CUGGCAUU	6892	AATGCCAG GGCTAGCTACAACGA ATCCCCAC	15641
1093	GGUUCGUG G CAUUCUG	6893	CAGGAATG GGCTAGCTACAACGA CAGCATCC	15642
1091	AUGCUGGC A UUCUGGC	6894	GCCAGGAA GGCTAGCTACAACGA GCCAGCAT	15643
1084	CAUUCUG G CCGCAGC	6895	GCTCGCGG GGCTAGCTACAACGA CAGGAATG	15644
1081	UCCUGGCC G CGAGCGUG	6896	CACGCTCG GGCTAGCTACAACGA GGCCAGGA	15645
1077	GGCCCGCA G CGUGGGAG	6897	CTCCACCG GGCTAGCTACAACGA TCGCGGCC	15646
1075	CCGCGAGC G UGGGAGUG	6898	CACTCCCA GGCTAGCTACAACGA GCTCGCGG	15647
1069	GCGUGGGG A UGAGCGCU	6899	AGCGCTCA GGCTAGCTACAACGA TCCACGCG	15648
1065	GGGAGUGA G CGCUACCC	6900	GGGTACCG GGCTAGCTACAACGA TCACCTCC	15649
1063	GAGUGAGC G CUACCCAG	6901	CTGGGTAG GGCTAGCTACAACGA GCTCACTC	15650
1060	UGAGCGCU A CCCAGCAG	6902	CTGCTGGG GGCTAGCTACAACGA AGCGCTCA	15651
1055	GCUACCCA G CAGCGGGA	6903	TCCCCTG GGCTAGCTACAACGA TGGGTAGC	15652
1052	ACCCAGCA G CGGGAGGA	6904	TCCTCCCG GGCTAGCTACAACGA TGCTGGGT	15653
1043	CGGGAGGA G UUGUUCUC	6905	GAGAACAA GGCTAGCTACAACGA TCCTCCCG	15654
1040	GAGGAGUU G UUCUCCCG	6906	CGGGAGAA GGCTAGCTACAACGA AACTCCTC	15655
1030	UCUCCCGA A CGCAGGGC	6907	GCCCTGCG GGCTAGCTACAACGA TCGGGAGA	15656
1028	UCCCGAAC G CAGGGCAC	6908	GTGCCCTG GGCTAGCTACAACGA GTTCGGGA	15657
1023	AACGCAAG G CACGCACC	6909	GGTCCGTG GGCTAGCTACAACGA CCTCGGTT	15658
1021	CGCAGGGC A CGCACCCC	6910	GGGGTGCG GGCTAGCTACAACGA GCCCTGCG	15659
1019	CAGGGCAC G CACCCCGG	6911	CCGGGGTG GGCTAGCTACAACGA GTGCCCTG	15660
1017	GGGCACGC A CCCGGGGG	6912	CCCGGGGG GGCTAGCTACAACGA GCGTGCCC	15661
1009	ACCCCGGG G UGUGCAUG	6913	CATGCACA GGCTAGCTACAACGA CCCGGGGT	15662
1007	CCCGGGGU G UGCAUGAU	6914	ATCATGCA GGCTAGCTACAACGA ACCCGGGG	15663
1005	CGGGGUGU G CAUGAUCA	6915	TGATCATG GGCTAGCTACAACGA ACACCCCG	15664
1003	GGGUGUGC A UGAUCAUG	6916	CATGATCA GGCTAGCTACAACGA GCACACCC	15665
1000	UGUGCAUG A UCAUGUCC	6917	GGACATGA GGCTAGCTACAACGA CATGCACA	15666
997	GCAUGAUC A UGUCCUCU	6918	AGAGGACA GGCTAGCTACAACGA GATCATGC	15667
995	AUGAUCAU G UCCUCUGC	6919	GCAGAGGA GGCTAGCTACAACGA ATGATCAT	15668
988	UGUCCUCU G CCUCAUAC	6920	GTATGAGG GGCTAGCTACAACGA AGAGGACA	15669
983	UCUGCCUC A UACACAAU	6921	ATTGTGTA GGCTAGCTACAACGA GAGGCAGA	15670
981	UGCCUCAU A CACAAUGC	6922	GCATTGTG GGCTAGCTACAACGA ATGAGGCA	15671
979	CCUCAUAC A CAAUGCUU	6923	AAGCATTG GGCTAGCTACAACGA GTATGAGG	15672
976	CAUACACA A UGCUUGAG	6924	CTCAAGCA GGCTAGCTACAACGA TGTGTATG	15673
974	UACACAAU G CUUGAGUU	6925	AACTCAAG GGCTAGCTACAACGA ATTGTGTA	15674
968	AUGCUUGA G UUGGAGCA	6926	TGCTCCAA GGCTAGCTACAACGA TCAAGCAT	15675
962	GAGUUGGA G CAAUCGUU	6927	AACGATTG GGCTAGCTACAACGA TCCAACCT	15676
959	UUGGAGCA A UCGUUCGU	6928	ACGAACGA GGCTAGCTACAACGA TGCTCCAA	15677
956	GAGCAAUC G UUCGUGAC	6929	GTCACGAA GGCTAGCTACAACGA GATTGCTC	15678
952	AAUCGUUC G UGACAUGG	6930	CCATGTCA GGCTAGCTACAACGA GAACGATT	15679
949	CGUUCGUG A CAUGGUAC	6931	GTACCATG GGCTAGCTACAACGA CACGAACG	15680
947	UUCGUGAC A UGUACAG	6932	CTGTACCA GGCTAGCTACAACGA GTCACGAA	15681
944	GUGACAUG G UACAGCCC	6933	GGGCTGTA GGCTAGCTACAACGA CATGTCAC	15682
942	GACAUGGU A CAGCCCGG	6934	CCGGGCTG GGCTAGCTACAACGA ACCATGTC	15683
939	AUGGUACA G CCCGACG	6935	CGTCCGGG GGCTAGCTACAACGA TGTACCAT	15684
933	CAGCCCGG A CGCGUUGC	6936	GCAACGCG GGCTAGCTACAACGA CCGGGCTG	15685
931	GCCCGGAC G CGUUGCAC	6937	GTGCAACG GGCTAGCTACAACGA GTCCGGGC	15686

929	CCGGACGC G UUGCACAC	6938	GTGTGCAA GGCTAGCTACAACGA GCGTCCGG	15687
926	GACGCGUU G CACACCUC	6939	GAGGTGTG GGCTAGCTACAACGA AACGCGTC	15688
924	CGCGUUGC A CACCUCAU	6940	ATGAGGTG GGCTAGCTACAACGA GCAACGCG	15689
922	CGUUGCAC A CCUCAUAA	6941	TTATGAGG GGCTAGCTACAACGA GTGCAACG	15690
917	CACACCUC A UAAGCGGA	6942	TCCGCTTA GGCTAGCTACAACGA GAGGTGTG	15691
913	CCUCAUAA G CGGAGGCU	6943	AGCCTCCG GGCTAGCTACAACGA TTATGAGG	15692
907	AAGCGGAG G CUGGGAUG	6944	CATCCCAG GGCTAGCTACAACGA CTCGCTT	15693
901	AGGCUGGG A UGGUCAGA	6945	TCTGACCA GGCTAGCTACAACGA CCCAGCCT	15694
898	CUGGGAUG G UCAGACAG	6946	CTGTCTGA GGCTAGCTACAACGA CATCCCAG	15695
893	AUGGUCAG A CAGGGCAG	6947	CTGCCCTG GGCTAGCTACAACGA CTGACCAT	15696
888	CAGACAGG G CAGCAGAG	6948	CTCTGCTG GGCTAGCTACAACGA CCTGTCTG	15697
885	ACAGGGCA G CAGAGCCA	6949	TGGCTCTG GGCTAGCTACAACGA TGCCTGT	15698
880	GCAGCAGA G CCAAGAGG	6950	CCTCTTGG GGCTAGCTACAACGA TCTGCTGC	15699
868	AGAGGAAG A UAGAGAAA	6951	TTTCTCTA GGCTAGCTACAACGA CTTCTCT	15700
857	GAGAAAGA G CAACCGGG	6952	CCGCTTGG GGCTAGCTACAACGA TCTTCTC	15701
854	AAAGAGCA A CCGGGCAG	6953	CTGCCCCG GGCTAGCTACAACGA TGTCTTT	15702
849	GCAACCGG G CAGAUUCC	6954	GGAATCTG GGCTAGCTACAACGA CCGGTTGC	15703
845	CCGGGCAG A UUCCUGU	6955	ACAGGGAA GGCTAGCTACAACGA CTGCCCCG	15704
838	GAUUCCU G UUGCAUAG	6956	CTATGCAA GGCTAGCTACAACGA AGGGAATC	15705
835	UCCUGUU G CAUAGUUC	6957	GAACTATG GGCTAGCTACAACGA AACAGGGA	15706
833	CCUGUUGC A UAGUUCAC	6958	GTGAACTA GGCTAGCTACAACGA GCAACAGG	15707
830	GUUGCAUA G UUCACGCC	6959	GGCGTGAA GGCTAGCTACAACGA TATGCAAC	15708
826	CAUAGUUC A CGCCGUCU	6960	AGACGGCG GGCTAGCTACAACGA GAACTATG	15709
824	UAGUUCAC G CCGUCUUC	6961	GAAGACGG GGCTAGCTACAACGA GTGAACTA	15710
821	UUCACGCC G UCUUCCAG	6962	CTGGAAGA GGCTAGCTACAACGA GGCCTGAA	15711
811	CUUCCAGA A CCCGGACG	6963	CGTCCGGG GGCTAGCTACAACGA TCTGGAAG	15712
805	GAACCCGG A CGCCAUGC	6964	GCATGGCG GGCTAGCTACAACGA CCGGGTTC	15713
803	ACCCGGAC G CCAUGC GC	6965	GCGCATGG GGCTAGCTACAACGA GTCCGGGT	15714
800	CGGACGCC A UGCGCCAG	6966	CTGGCGCA GGCTAGCTACAACGA GGCCTCCG	15715
798	GACGCCAU G CGCCAGGG	6967	CCCTGGCG GGCTAGCTACAACGA ATGGCGTC	15716
796	CGCCAGU G CAGGGGCC	6968	GGCCCTGG GGCTAGCTACAACGA GCATGGCG	15717
790	GCGCCAGG G CCCUGGCA	6969	TGCCAGGG GGCTAGCTACAACGA CTTGGCGC	15718
784	GGGCCCUG G CAGUGCCU	6970	AGGCACTG GGCTAGCTACAACGA CAGGGCCC	15719
781	CCUUGGCA G UGCCUCCC	6971	GGGAGGCA GGCTAGCTACAACGA TGCCAGGG	15720
779	CUGGCAGU G CCUCCCAA	6972	TTGGGAGG GGCTAGCTACAACGA ACTGCCAG	15721
766	CCAAGGGG G CGCCGACG	6973	CGTCGGCG GGCTAGCTACAACGA CCCCTTGG	15722
764	AAGGGGGC G CCGACGAG	6974	CTCGTCCG GGCTAGCTACAACGA GCCCCTT	15723
760	GGGCGCCG A CGAGCGGA	6975	TCCGCTCG GGCTAGCTACAACGA CGGCGCCC	15724
756	GCCGACGA G CGGAAUGU	6976	ACATTCCG GGCTAGCTACAACGA TCGTCGGC	15725
751	CGAGCGGA A UGUACCCC	6977	GGGGTACA GGCTAGCTACAACGA TCCGCTCG	15726
749	AGCGGAAU G UACCCCAU	6978	ATGGGGTA GGCTAGCTACAACGA ATTCCGCT	15727
747	CGGAAUGU A CCCC AUGA	6979	TCATGGGG GGCTAGCTACAACGA ACATTCCG	15728
742	UGUACCCC A UGAGGUCG	6980	CGACCTCA GGCTAGCTACAACGA GGGGTACA	15729
737	CCAUGAG G UCGGCGAA	6981	TTCGCCGA GGCTAGCTACAACGA CTCATGGG	15730
733	UGAGGUCG G CGAAGCCG	6982	CGGCTTCG GGCTAGCTACAACGA CGACCTCA	15731
728	UCGGCGAA G CCGCAUGU	6983	ACATGCGG GGCTAGCTACAACGA TTCGCCGA	15732
725	GCGAAGCC G CAUGUGAG	6984	CTCACATG GGCTAGCTACAACGA GGCTTCGC	15733
723	GAAGCCGC A UGUGAGGG	6985	CCCTCACA GGCTAGCTACAACGA GCGGCTTC	15734
721	AGCCGCAU G UGAGGGUA	6986	TACCCTCA GGCTAGCTACAACGA ATGCGGCT	15735
715	AUGUGAGG G UAUCGAUG	6987	CATCGATA GGCTAGCTACAACGA CCTCACAT	15736
713	GUGAGGGU A UCGAUGAC	6988	GTCATCGA GGCTAGCTACAACGA ACCCTCAC	15737
709	GGGUAUCG A UGACCUUA	6989	TAAGGTCA GGCTAGCTACAACGA CGATACCC	15738
706	UAUCGAUG A CCUUAACC	6990	GGGTAAGG GGCTAGCTACAACGA CATCGATA	15739
701	AUGACCUU A CCCAAGUU	6991	AACTTGGG GGCTAGCTACAACGA AAGGTCAT	15740
695	UUACCCAA G UUACGCGA	6992	TCGCGTAA GGCTAGCTACAACGA TTGGGTAA	15741
692	CCCAAGUU A CGCGACCU	6993	AGGTGCGG GGCTAGCTACAACGA AACTTGGG	15742

690	CAAGUUAC G CGACCUAC	6994	GTAGGTCG GGCTAGCTACAACGA GTAACCTG	15743
687	GUUACGCG A CCUACGCC	6995	GGCGTAGG GGCTAGCTACAACGA CGCGTAAC	15744
683	CGCGACCU A CGCCGGGG	6996	CCCCGGCG GGCTAGCTACAACGA AGGTGCGG	15745
681	CGACCUAC G CCGGGGGU	6997	ACCCCCGG GGCTAGCTACAACGA GTAGGTCG	15746
674	CGCCGGGG G UCCGUGGG	6998	CCCACGGA GGCTAGCTACAACGA CCCC GGCG	15747
670	GGGGGUCC G UGGGGCCC	6999	GGGCCCCA GGCTAGCTACAACGA GGACCCCC	15748
665	UCCGUGGG G CCCC AACU	7000	AGTTGGGG GGCTAGCTACAACGA CCCACGGA	15749
659	GGGCCCCA A CUAGGCCG	7001	CGGCCTAG GGCTAGCTACAACGA TGGGGCCC	15750
654	CCAACUAG G CCGGGAGC	7002	GCTCCCGG GGCTAGCTACAACGA CTAGTTGG	15751
647	GGCCGGGA G CCGCGGGG	7003	CCCCGGCG GGCTAGCTACAACGA TCCCGGCC	15752
644	CGGGAGCC G CCGGGUGA	7004	TCACCCCG GGCTAGCTACAACGA GGCTCCCG	15753
639	GCCGCGGG G UGACAGGA	7005	TCCTGTCA GGCTAGCTACAACGA CCGCGGGC	15754
636	GCGGGGUG A CAGGAGCC	7006	GGCTCCTG GGCTAGCTACAACGA CACCCCGC	15755
630	UGACAGGA G CCAUCCUG	7007	CAGGATGG GGCTAGCTACAACGA TCCTGTCA	15756
627	CAGGAGCC A UCCUGCCC	7008	GGGCAGGA GGCTAGCTACAACGA GGCTCCTG	15757
622	GCCAUCUU G CCCACCCU	7009	AGGGTGGG GGCTAGCTACAACGA AGGATGGC	15758
618	UCCUGCCC A CCCUAAGC	7010	GCTTAGGG GGCTAGCTACAACGA GGGCAGGA	15759
611	CACCCUAA G CCCUCAU	7011	AATGAGGG GGCTAGCTACAACGA TTAGGGTG	15760
605	AAGCCUC A UUGCCAU	7012	TATGGCAA GGCTAGCTACAACGA GAGGGCTT	15761
602	CCUCAU G CCAUAGAG	7013	CTCTATGG GGCTAGCTACAACGA AATGAGGG	15762
599	UCAUUGCC A UAGAGGGG	7014	CCCCTCTA GGCTAGCTACAACGA GGCAATGA	15763
591	AUAGAGGG G CCAAGGGU	7015	ACCCTTGG GGCTAGCTACAACGA CCCTCTAT	15764
584	GGCCAAGG G UACCCGGG	7016	CCCGGGTA GGCTAGCTACAACGA CCTTGGCC	15765
582	CCAAGGGU A CCGGGGCU	7017	AGCCCGGG GGCTAGCTACAACGA ACCCTTGG	15766
576	GUACCCGG G CUGAGCCC	7018	GGGCTCAG GGCTAGCTACAACGA CCGGGTAC	15767
571	CGGGCUGA G CCCAGGCC	7019	GGCTTGGG GGCTAGCTACAACGA TCAGCCCC	15768
565	GAGCCAG G CCCUGCCC	7020	GGGCAGGG GGCTAGCTACAACGA CTGGGCTC	15769
560	CAGGCCCU G CCCUCGGG	7021	CCCGAGGG GGCTAGCTACAACGA AGGGCCTG	15770
552	GCCCUCGG G CCGGCGAG	7022	CTCGCCGG GGCTAGCTACAACGA CCGAGGGC	15771
548	UCGGGCCG G CGAGCCUU	7023	AAGGCTCG GGCTAGCTACAACGA CGGCCCGA	15772
544	GCCGGCGA G CCUUGGGG	7024	CCCCAAGG GGCTAGCTACAACGA TCGCCGGC	15773
535	CCUUGGGG A UAGGUUGU	7025	ACAACCTA GGCTAGCTACAACGA CCCC AAGG	15774
531	GGGGAUAG G UUGUCGCC	7026	GGCGACAA GGCTAGCTACAACGA CTATCCCC	15775
528	GAUAGGUU G UCGCCUUC	7027	GGAAGCGA GGCTAGCTACAACGA AACCTATC	15776
525	AGGUUGUC G CCUCCAC	7028	GTGGAAGG GGCTAGCTACAACGA GACAACCT	15777
518	CGCCUUC A CGAGGUUG	7029	CAACCTCG GGCTAGCTACAACGA GGAAGCGG	15778
513	UCCACGAG G UUGCGACC	7030	GGTCGCAA GGCTAGCTACAACGA CTCGTGGA	15779
510	ACGAGGUU G CGACCGCU	7031	AGCGGTCT GGCTAGCTACAACGA AACCTCGT	15780
507	AGGUUGCG A CCGCUCGG	7032	CCGAGCGG GGCTAGCTACAACGA CGCAACCT	15781
504	UUGCGACC G CUCGGAAG	7033	CTTCCGAG GGCTAGCTACAACGA GGTCGCAA	15782
496	GCUCGGAA G UCUUCCUA	7034	TAGGAAGA GGCTAGCTACAACGA TTCCGAGC	15783
487	UCUUCUA G UCGCGCGC	7035	GCGCGCGA GGCTAGCTACAACGA TAGGAAGA	15784
484	UCCUAGUC G CGCGCACA	7036	TGTGCGCG GGCTAGCTACAACGA GACTAGGA	15785
482	CUAGUCGC G CGCACACC	7037	GGTGTGCG GGCTAGCTACAACGA GCGACTAG	15786
480	AGUCGCGC G CACACCCA	7038	TGGGTGTG GGCTAGCTACAACGA GCGCGACT	15787
478	UCGCGCGC A CACCAAC	7039	GTTGGGTG GGCTAGCTACAACGA GCGCGCGA	15788
476	GCGCGCAC A CCAACCU	7040	AGGTGGGG GGCTAGCTACAACGA GTGCGCGC	15789
471	CACACCCA A CCUGGGGC	7041	GCCCCAGG GGCTAGCTACAACGA TGGGTGTG	15790
464	AACCUGGG G CCCUGCG	7042	CGCAGGGG GGCTAGCTACAACGA CCCAGGTT	15791
458	GGGCCCCU G CGCGGCAA	7043	TTGCCCGG GGCTAGCTACAACGA AGGGGGCC	15792
456	GCCCCUGC G CGGCAACA	7044	TGTGCCCG GGCTAGCTACAACGA GCAGGGGC	15793
453	CCUGCGCG G CAACAGGU	7045	ACCTGTTG GGCTAGCTACAACGA CGCGCAGG	15794
450	GCGCGGCA A CAGGUAAA	7046	TTTACCTG GGCTAGCTACAACGA TGCCGCGC	15795
446	GGCAACAG G UAAACUCC	7047	GGAGTTTA GGCTAGCTACAACGA CTGTTGCC	15796
442	ACAGGUAA A CUCCACCA	7048	TGGTGGAG GGCTAGCTACAACGA TTACCTGT	15797
437	UAAACUCC A CCAACGAU	7049	ATCGTTGG GGCTAGCTACAACGA GGAGTTTA	15798

433	CUCCACCA A CGAUCUGA	7050	TCAGATCG GGCTAGCTACAACGA TGGTGGAG	15799
430	CACCAACG A UCUGACCA	7051	TGGTCAGA GGCTAGCTACAACGA CGTTGGTG	15800
425	ACGAUCUG A CCACCGCC	7052	GGCGGTGG GGCTAGCTACAACGA CAGATCGT	15801
422	AUCUGACC A CCGCCCGG	7053	CCGGCGGG GGCTAGCTACAACGA GGTGAGAT	15802
419	UGACCACC G CCCGGGAA	7054	TTCCCGGG GGCTAGCTACAACGA TGTGGTCA	15803
411	CCCCGGGA A CUUGACGU	7055	ACGTCAAG GGCTAGCTACAACGA TCCCGGGC	15804
406	GGAACUUG A CGUCCUGU	7056	ACAGGACG GGCTAGCTACAACGA CAAGTTCC	15805
404	AACUUGAC G UCCUGUGG	7057	CCACAGGA GGCTAGCTACAACGA GTCAAGTT	15806
399	GACGUCCU G UGGGCGGC	7058	GCCGCCCA GGCTAGCTACAACGA AGGACGTC	15807
395	UCCUGUGG G CGGCGGUU	7059	AACCGCCG GGCTAGCTACAACGA CCACAGGA	15808
392	UGUGGGCG G CGGUUGGU	7060	ACCAACCG GGCTAGCTACAACGA CGCCCCA	15809
389	GGCGGCG G UUGGUGU	7061	AACACCAA GGCTAGCTACAACGA CGCCGCC	15810
385	GGCGGUUG G UGUUACGU	7062	AAACGTAA GGCTAGCTACAACGA CAACCGCC	15811
383	CGGUUGGU G UUACGUU	7063	AAACGTAA GGCTAGCTACAACGA CAACCGCC	15812
380	UUGGUGU A CGUUGGU	7064	ACCAAACG GGCTAGCTACAACGA AACACCAA	15813
378	GGUGUAC G UUUGGUU	7065	AAACCAA GGCTAGCTACAACGA GTAACACC	15814
373	UACGUUUG G UUUUCUU	7066	AAGAAAAA GGCTAGCTACAACGA CAAACGTA	15815
360	UCUUUGAG G UUUAGGAU	7067	ATCCTAAA GGCTAGCTACAACGA CTCAAAGA	15816
353	GGUUUAGG A UUCGUGCU	7068	AGCACGAA GGCTAGCTACAACGA CCTAAACC	15817
349	UAGGAUUC G UGCUCAUG	7069	CATGAGCA GGCTAGCTACAACGA GAATCCTA	15818
347	GGAUUCGU G CUCAUGGU	7070	ACCATGAG GGCTAGCTACAACGA ACGAATCC	15819
343	UCGUGCUC A UGGUGCAC	7071	GTGCACCA GGCTAGCTACAACGA GAGCACGA	15820
340	UGCUCAUG G UGCACGGU	7072	ACCGTGCA GGCTAGCTACAACGA CATGAGCA	15821
338	CUCAUGGU G CACGGUCU	7073	AGACCGTG GGCTAGCTACAACGA ACCATGAG	15822
336	CAUGGUGC A CGGUCUAC	7074	GTAGACCG GGCTAGCTACAACGA GCACCATG	15823
333	GGUGCACG G UCUACGAG	7075	CTCGTAGA GGCTAGCTACAACGA CGTGCACC	15824
329	CACGGUCU A CGAGACCU	7076	AGGTCTCG GGCTAGCTACAACGA AGACCGTG	15825
324	UCUACGAG A CCUCCCGG	7077	CCGGGAGG GGCTAGCTACAACGA CTCGTAGA	15826
314	CUCCCGGC G CACUCGCA	7078	TGCGAGTG GGCTAGCTACAACGA CCCGGGAG	15827
312	CCCGGGGC A CUCGCAAG	7079	CTTGCGAG GGCTAGCTACAACGA GCCCCGGG	15828
308	GGGCACUC G CAAGCACC	7080	GGTGCTTG GGCTAGCTACAACGA GAGTCGCC	15829
304	ACUCGCAA G CACCCUAU	7081	ATAGGGTG GGCTAGCTACAACGA TTGCGAGT	15830
302	UCGCAAGC A CCCUAUCA	7082	TGATAGGG GGCTAGCTACAACGA GCTTGCGA	15831
297	AGCACCCU A UCAGGCAG	7083	CTGCCTGA GGCTAGCTACAACGA AGGGTGCT	15832
292	CCUAUCAG G CAGUACCA	7084	TGGTACTG GGCTAGCTACAACGA CTGATAGG	15833
289	AUCAGGCA G UACCACAA	7085	TTGTGGTA GGCTAGCTACAACGA TGCCTGAT	15834
287	CAGGCAGU A CCACAAGG	7086	CCTTGTGG GGCTAGCTACAACGA ACTGCCTG	15835
284	GCAGUACC A CAAGGCCU	7087	AGGCCTTG GGCTAGCTACAACGA GGTACTGC	15836
279	ACCACAAG G CCUUUCGC	7088	GCGAAAGG GGCTAGCTACAACGA CTTGTGGT	15837
272	GGCCUUUC G CGACCCAA	7089	TTGGGTGC GGCTAGCTACAACGA GAAAGGCC	15838
269	CUUUCGCG A CCCAACAC	7090	GTGTTGGG GGCTAGCTACAACGA CGCGAAAG	15839
264	GCGACCCA A CACUACUC	7091	GAGTAGTG GGCTAGCTACAACGA TGGGTCGC	15840
262	GACCCAAC A CUACUCGG	7092	CCGAGTAG GGCTAGCTACAACGA GTTGGGTC	15841
259	CCAACACU A CUCGGCUA	7093	TAGCCGAG GGCTAGCTACAACGA AGTGTGG	15842
254	ACUACUCG G CUAGCAGU	7094	ACTGCTAG GGCTAGCTACAACGA CGAGTAGT	15843
250	CUCGGCUA G CAGUCUCG	7095	CCGAGCTG GGCTAGCTACAACGA TAGCCGAG	15844
247	GGCUAGCA G UCUCGCGG	7096	CCGAGCTG GGCTAGCTACAACGA TGCTAGCC	15845
242	GCAGUCUC G CGGGGGCA	7097	TGCCCCCG GGCTAGCTACAACGA GAGACTGC	15846
236	UCGCGGGG G CACGCCCA	7098	TGGGCGTG GGCTAGCTACAACGA CCCCAGCA	15847
234	GCGGGGGC A CGCCCCAA	7099	TTTGGGCG GGCTAGCTACAACGA GCCCCGCG	15848
232	GGGGGCAC G CCCAAUUC	7100	GATTTGGG GGCTAGCTACAACGA GTGCCCCC	15849
226	ACGCCCAA A UCUCACAGG	7101	CCTGGAGA GGCTAGCTACAACGA TTGGGCGT	15850
218	AUCUCCAG G CAUUGAGC	7102	GCTCAATG GGCTAGCTACAACGA CTGGAGAT	15851
216	CUCCAGGC A UUGAGCGG	7103	CCGCTCAA GGCTAGCTACAACGA GCCTGGAG	15852
211	GGCAUUGA G CGGGUUGA	7104	TCAACCGG GGCTAGCTACAACGA TCAATGCC	15853
207	UUGAGCGG G UUGAUCCA	7105	TGGATCAA GGCTAGCTACAACGA CCGCTCAA	15854

203	GCGGGUUG A UCCAAGAA	7106	TTCTTGGA GGCTAGCTACAACGA CAACCCGC	15855
191	AAGAAAGG A CCCGUCG	7107	CGACCGGG GGCTAGCTACAACGA CCTTCTT	15856
186	AGGACCCG G UCGUCCUG	7108	CAGGACGA GGCTAGCTACAACGA CGGGTCCT	15857
183	ACCCGGUC G UCCUGGCA	7109	TGCCAGGA GGCTAGCTACAACGA GACCGGGT	15858
177	UCGUCCUG G CAAUCCG	7110	CGGAATTG GGCTAGCTACAACGA CAGGACGA	15859
174	UCCUGGCA A UUCCGGUG	7111	CACCGGAA GGCTAGCTACAACGA TGCCAGGA	15860
168	CAAUCCG G UGUACUCA	7112	TGAGTACA GGCTAGCTACAACGA CGGAATTG	15861
166	AUUCGGU G UACUCACC	7113	GGTGAGTA GGCTAGCTACAACGA ACCGGAAT	15862
164	UCCGGUGU A CUCACCG	7114	CCGGTGAG GGCTAGCTACAACGA ACACCGGA	15863
160	GUGUACUC A CCGGUCC	7115	GGAACCGG GGCTAGCTACAACGA GAGTACAC	15864
156	ACUCACCG G UUCCGCAG	7116	CTGCGGAA GGCTAGCTACAACGA CGGTGAGT	15865
151	CCGGUUC G CAGACCAC	7117	GTGGTCTG GGCTAGCTACAACGA GGAACCGG	15866
147	UUCCGCAG A CCACUAUG	7118	CATAGTGG GGCTAGCTACAACGA CTGCGGAA	15867
144	CGCAGACC A CUAUGGCU	7119	AGCCATAG GGCTAGCTACAACGA GTCTGCG	15868
141	AGACCACU A UGGCUCUC	7120	GAGAGCCA GGCTAGCTACAACGA AGTGGTCT	15869
138	CCACUAUG G CUCUCCG	7121	CGGGAGAG GGCTAGCTACAACGA CATAGTGG	15870
120	GAGGGGGG G UCCUGGAG	7122	CTCCAGGA GGCTAGCTACAACGA CCCCCTC	15871
111	UCCUGGAG G CUGCACGA	7123	TCGTGCAG GGCTAGCTACAACGA CTCCAGGA	15872
108	UGGAGGCU G CACGACAC	7124	GTGTCGTG GGCTAGCTACAACGA AGCCTCCA	15873
106	GAGGCGUC A CGACACUC	7125	GAGTGTCTG GGCTAGCTACAACGA GCAGCCTC	15874
103	GCUGCACG A CACUCAUA	7126	TATGATGG GGCTAGCTACAACGA CGTGCAGC	15875
101	UGCACGAC A CUCAUACU	7127	AGTATGAG GGCTAGCTACAACGA GTCGTGCA	15876
97	CGACACUC A UACUACG	7128	CGTTAGTA GGCTAGCTACAACGA GAGTGTCTG	15877
95	ACACUCAU A CUAACGCC	7129	GGCGTTAG GGCTAGCTACAACGA ATGAGTGT	15878
91	UCAUACUA A CGCCAUGG	7130	CCATGGCG GGCTAGCTACAACGA TAGTATGA	15879
89	AUACUAAC G CCAUGGCU	7131	AGCCATGG GGCTAGCTACAACGA GTTAGTAT	15880
86	CUAACGCC A UGGCUAGA	7132	TCTAGCCA GGCTAGCTACAACGA GGCGTTAG	15881
83	ACGCCAUG G CUAGACGC	7133	GCGTCTAG GGCTAGCTACAACGA CATGGCGT	15882
78	AUGGCUAG A CGCUUUCU	7134	AGAAAGCG GGCTAGCTACAACGA CTAGCCAT	15883
76	GGCUAGAC G CUUUCUGC	7135	GCAGAAAG GGCTAGCTACAACGA GTCTAGCC	15884
69	CGCUUUCU G CGUGAAGA	7136	TCTTCACG GGCTAGCTACAACGA AGAAAGCG	15885
67	CUUUCUGC G UGAAGACA	7137	TGTCTTCA GGCTAGCTACAACGA GCAGAAAG	15886
61	GCGUGAAG A CAGUAGUU	7138	AACTACTG GGCTAGCTACAACGA CTTCACGC	15887
58	UGAAGACA G UAGUCCU	7139	AGGAACTA GGCTAGCTACAACGA TGTCTTCA	15888
55	AGACAGUA G UCCUCAC	7140	GTGAGGAA GGCTAGCTACAACGA TACTGTCT	15889
48	AGUCCUC A CAGGGGAG	7141	CTCCCCTG GGCTAGCTACAACGA GAGGAACT	15890
40	ACAGGGGA G UGAUCUAU	7142	ATAGATCA GGCTAGCTACAACGA TCCCCTGT	15891
37	GGGGAGUG A UCUAUGGU	7143	ACCATAGA GGCTAGCTACAACGA CACTCCCC	15892
33	AGUGAUCU A UGGUGGAG	7144	CTCCACCA GGCTAGCTACAACGA AGATCACT	15893
30	GAUCUAUG G UGGAGUGU	7145	ACACTCCA GGCTAGCTACAACGA CATAGATC	15894
25	AUGGUGGA G UGUCGCCC	7146	GGGCGACA GGCTAGCTACAACGA TCCACCAT	15895
23	GGUGGAGU G UCGCCCC	7147	GGGGCGGA GGCTAGCTACAACGA ACTCCACC	15896

Input Sequence = HPCK1S1. Cut Site = R/Y

Arm Length = 8. Core Sequence = GGCTAGCTACAACGA

HPCK1S1 Hepatitis C virus (strain HCV-1b, clone HCV-K1-S1), complete genome; acc#  
gi|1030702|dbj|D50483.1; 9410 nt

Table XX: Synthetic anti-HCV nucleic acid molecule and Target Sequences

ref pos	Ref Seq	Target	Seq ID	RPI#	NUCLEIC ACID	Seq ID	Nucleic Acid Alias
195	HCV+	GGGUCCU U UCUUGGA	7148	15364	C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> G <sub>5</sub> CUGAUgagcggaagccGaa Aggacc B	15897	Hammerhead
342	HCV+	AGACCGUGCAUGAGCAC	7149	17501	G <sub>5</sub> T <sub>5</sub> G <sub>5</sub> C <sub>5</sub> T <sub>5</sub> C <sub>5</sub> A <sub>5</sub> T <sub>5</sub> G <sub>5</sub> A <sub>5</sub> T <sub>5</sub> G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> G <sub>5</sub> G <sub>5</sub> T <sub>5</sub> C <sub>5</sub> T	15898	Antisense
195	HCV+	GGGUCCU U UCUUGGA	7148	17558	C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> G <sub>5</sub> CUGAUgagcgguuagccGaz Aggacc B	15899	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	17559	C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> G <sub>5</sub> CUGAUgagcgguuagccGaa AggazC B	15900	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	17560	Z <sub>5</sub> C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> G <sub>5</sub> CUGAUgagcgguuagccGaa Aggacc B	15901	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	17561	Z <sub>5</sub> C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> G <sub>5</sub> CUGAUgagcgguuagccGaa Aggacc B	15902	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	18012	ccaaga CUGAUgagcgguuagccGaa Aggacc B	15903	Hammerhead
82	HCV+	CGGUCUA G CCAUGGC	7150	18744	G <sub>5</sub> C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> UgG GcggaaagGCGaGucaaaGGuCu uagacgc B	15904	Zinzyme
100	HCV+	AGUAUGA G UGUCGUG	7151	18745	C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> g <sub>5</sub> aca GcggaaagGCGaGucaaaGGuCu ucauacu B	15905	Zinzyme
102	HCV+	UAUGAGU G UCGUGCA	7152	18746	U <sub>5</sub> G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> CgA GcggaaagGCGaGucaaaGGuCu acucaua B	15906	Zinzyme
105	HCV+	GAGUGUC G UGCAGCC	7153	18747	G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> UgGca GcggaaagGCGaGucaaaGGuCu gacacuc B	15907	Zinzyme
107	HCV+	GUGUCGU G CAGCCUC	7154	18748	G <sub>5</sub> A <sub>5</sub> G <sub>5</sub> g <sub>5</sub> cug GcggaaagGCGaGucaaaGGuCu acgacac B	15908	Zinzyme
146	HCV+	CAUAGUG G UCUGCGG	7155	18749	C <sub>5</sub> C <sub>5</sub> g <sub>5</sub> C <sub>5</sub> aga GcggaaagGCGaGucaaaGGuCu cacuaug B	15909	Zinzyme
190	HCV+	CGACCGG G UCCUUC	7156	18750	G <sub>5</sub> A <sub>5</sub> A <sub>5</sub> A <sub>5</sub> gga GcggaaagGCGaGucaaaGGuCu ccggucg B	15910	Zinzyme
217	HCV+	GCUCAU G CCUGGAG	7157	18751	C <sub>5</sub> U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> agg GcggaaagGCGaGucaaaGGuCu auuagac B	15911	Zinzyme
231	HCV+	GAUUUGG G CGUGCCC	7158	18752	G <sub>5</sub> G <sub>5</sub> g <sub>5</sub> C <sub>5</sub> acg GcggaaagGCGaGucaaaGGuCu ccaaauc B	15912	Zinzyme
258	HCV+	UAGCCGA G UAGUGUU	7159	18753	A <sub>5</sub> A <sub>5</sub> C <sub>5</sub> A <sub>5</sub> cua GcggaaagGCGaGucaaaGGuCu ucggcua B	15913	Zinzyme
307	HCV+	GGUGCUU G CGAGUGC	7160	18754	G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> ucg GcggaaagGCGaGucaaaGGuCu aagcacc B	15914	Zinzyme
77	HCV+	GAAGC G UCUAGC	7161	18755	G <sub>5</sub> C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> gga GcggaaagGCGaGucaaaGGuCu gcuuuc B	15915	Zinzyme
77	HCV+	AGAAAGC G UCUAGCC	7162	18756	G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> U <sub>5</sub> aga GcggaaagGCGaGucaaaGGuCu gcuuuc B	15916	Zinzyme
88	HCV+	AGCCAUG G CGUUGU	7163	18757	A <sub>5</sub> C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> acg GcggaaagGCGaGucaaaGGuCu cauggcu B	15917	Zinzyme
94	HCV+	GGCGUUA G UAGAGU	7164	18758	A <sub>5</sub> C <sub>5</sub> U <sub>5</sub> C <sub>5</sub> aua GcggaaagGCGaGucaaaGGuCu uaacgcc B	15918	Zinzyme
102	HCV+	AUGAGU G UCGUGC	7165	18759	G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> ga GcggaaagGCGaGucaaaGGuCu acucau B	15919	Zinzyme
105	HCV+	AGUGUC G UGCAGC	7166	18760	G <sub>5</sub> C <sub>5</sub> U <sub>5</sub> g <sub>5</sub> ca GcggaaagGCGaGucaaaGGuCu gacacu B	15920	Zinzyme
110	HCV+	UCGUGCA G CCUCCAG	7167	18761	C <sub>5</sub> U <sub>5</sub> G <sub>5</sub> g <sub>5</sub> agg GcggaaagGCGaGucaaaGGuCu ugcacga B	15921	Zinzyme
137	HCV+	GGGAGA G CCAUAG	7168	18762	C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> UgG GcggaaagGCGaGucaaaGGuCu ucuccc B	15922	Zinzyme
137	HCV+	CGGGAGA G CCAUAGU	7169	18763	A <sub>5</sub> C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> UgG GcggaaagGCGaGucaaaGGuCu ucucccg B	15923	Zinzyme
146	HCV+	AUAGUG G UCUGCG	7170	18764	C <sub>5</sub> G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> ga GcggaaagGCGaGucaaaGGuCu cacuaa B	15924	Zinzyme
150	HCV+	GUGGUCU G CGGAACC	7171	18765	G <sub>5</sub> G <sub>5</sub> A <sub>5</sub> U <sub>5</sub> ccg GcggaaagGCGaGucaaaGGuCu agaccac B	15925	Zinzyme
176	HCV+	CGGAUUU G CCAGGAC	7172	18766	G <sub>5</sub> U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> UgG GcggaaagGCGaGucaaaGGuCu aaauccg B	15926	Zinzyme



190	HCV+	GACCGG G UCCUUU	7173	18767	a <sub>5</sub> a <sub>5</sub> a <sub>5</sub> g <sub>5</sub> ga GccgaaagGCGaGuaaGGuCu cccguc B	15927	Zinzyme
253	HCV+	CUUCUA G CCGAGU	7174	18768	a <sub>5</sub> c <sub>5</sub> u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu uagcag B	15928	Zinzyme
253	HCV+	ACUGCUA G CCGAGUA	7175	18769	u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> u <sub>5</sub> c <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu uagcagu B	15929	Zinzyme
258	HCV+	AGCCGA G UAGUGU	7176	18770	a <sub>5</sub> c <sub>5</sub> a <sub>5</sub> c <sub>5</sub> ua GccgaaagGCGaGuaaGGuCu ucggcu B	15930	Zinzyme
263	HCV+	GAGUAGU G UUGGGUC	7177	18771	g <sub>5</sub> a <sub>5</sub> c <sub>5</sub> a <sub>5</sub> c <sub>5</sub> caa GccgaaagGCGaGuaaGGuCu acuacuc B	15931	Zinzyme
268	HCV+	UGUUGG G UCGCGA	7178	18772	u <sub>5</sub> c <sub>5</sub> g <sub>5</sub> c <sub>5</sub> ga GccgaaagGCGaGuaaGGuCu ccaaca B	15932	Zinzyme
268	HCV+	GUUGUGG G UCGCGAA	7179	18773	u <sub>5</sub> u <sub>5</sub> c <sub>5</sub> g <sub>5</sub> c <sub>5</sub> ga GccgaaagGCGaGuaaGGuCu ccaacac B	15933	Zinzyme
271	HCV+	UUGGGUC G CGAAAGG	7180	18774	c <sub>5</sub> c <sub>5</sub> u <sub>5</sub> g <sub>5</sub> ucg GccgaaagGCGaGuaaGGuCu gaccaca B	15934	Zinzyme
283	HCV+	AGCCUU G UGGUACU	7181	18775	a <sub>5</sub> g <sub>5</sub> u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> cca GccgaaagGCGaGuaaGGuCu aaggccu B	15935	Zinzyme
286	HCV+	CCUUGUG G UACUGCC	7182	18776	g <sub>5</sub> g <sub>5</sub> c <sub>5</sub> a <sub>5</sub> gua GccgaaagGCGaGuaaGGuCu cacaagg B	15936	Zinzyme
291	HCV+	UGGUACU G CCUGAUA	7183	18777	u <sub>5</sub> a <sub>5</sub> u <sub>5</sub> c <sub>5</sub> agg GccgaaagGCGaGuaaGGuCu aguacca B	15937	Zinzyme
301	HCV+	UGAUAGG G UGCUUGC	7184	18778	g <sub>5</sub> c <sub>5</sub> a <sub>5</sub> a <sub>5</sub> gca GccgaaagGCGaGuaaGGuCu ccuauca B	15938	Zinzyme
303	HCV+	AUAGGGU G CUUGCGA	7185	18779	u <sub>5</sub> c <sub>5</sub> g <sub>5</sub> c <sub>5</sub> aag GccgaaagGCGaGuaaGGuCu acccuau B	15939	Zinzyme
60	HCV+	ACUACU G UCJUUA	7186	18780	u <sub>5</sub> g <sub>5</sub> a <sub>5</sub> a <sub>5</sub> gga GccgaaagGCGaGuaaGGuCu aguagu B	15940	Zinzyme
60	HCV+	AACUACU G UCJUAC	7187	18781	g <sub>5</sub> u <sub>5</sub> g <sub>5</sub> a <sub>5</sub> aga GccgaaagGCGaGuaaGGuCu aguagu B	15941	Zinzyme
68	HCV+	UCUUCAC G CAGAAAG	7188	18782	c <sub>5</sub> u <sub>5</sub> u <sub>5</sub> u <sub>5</sub> cug GccgaaagGCGaGuaaGGuCu gugaaga B	15942	Zinzyme
75	HCV+	CAGAAA G CGUCUA	7189	18783	u <sub>5</sub> a <sub>5</sub> g <sub>5</sub> a <sub>5</sub> c <sub>5</sub> g GccgaaagGCGaGuaaGGuCu uuucug B	15943	Zinzyme
82	HCV+	CGUCUA G CCAUGG	7190	18784	c <sub>5</sub> c <sub>5</sub> a <sub>5</sub> u <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu uagacg B	15944	Zinzyme
88	HCV+	GCCAUG G CGUUAG	7191	18785	c <sub>5</sub> u <sub>5</sub> a <sub>5</sub> a <sub>5</sub> c <sub>5</sub> g GccgaaagGCGaGuaaGGuCu cauggc B	15945	Zinzyme
90	HCV+	CAUGGC G UUAGUA	7192	18786	u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> u <sub>5</sub> aa GccgaaagGCGaGuaaGGuCu gccaug B	15946	Zinzyme
90	HCV+	CCAUGGC G UUAGUAU	7193	18787	a <sub>5</sub> u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> uaa GccgaaagGCGaGuaaGGuCu gccaugg B	15947	Zinzyme
100	HCV+	GUAGUA G UGUUGU	7194	18788	a <sub>5</sub> c <sub>5</sub> g <sub>5</sub> a <sub>5</sub> ca GccgaaagGCGaGuaaGGuCu ucauac B	15948	Zinzyme
107	HCV+	UGUCGU G CAGCCU	7195	18789	a <sub>5</sub> g <sub>5</sub> g <sub>5</sub> c <sub>5</sub> ug GccgaaagGCGaGuaaGGuCu acgaca B	15949	Zinzyme
110	HCV+	CGUGCA G CCUCCA	7196	18790	u <sub>5</sub> g <sub>5</sub> g <sub>5</sub> a <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu ugcaag B	15950	Zinzyme
150	HCV+	UGGUU G CGGAAC	7197	18791	g <sub>5</sub> u <sub>5</sub> u <sub>5</sub> c <sub>5</sub> cg GccgaaagGCGaGuaaGGuCu agacca B	15951	Zinzyme
159	HCV+	GGAACCG G UGAGUAC	7198	18792	g <sub>5</sub> u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> uca GccgaaagGCGaGuaaGGuCu cgguucc B	15952	Zinzyme
176	HCV+	GGAUUU G CCAGGA	7199	18793	u <sub>5</sub> c <sub>5</sub> c <sub>5</sub> u <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu aaaucc B	15953	Zinzyme
217	HCV+	CUCAAU G CCUGGA	7200	18794	u <sub>5</sub> c <sub>5</sub> a <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu auuag B	15954	Zinzyme
231	HCV+	AUUUGG G CGUGCC	7201	18795	g <sub>5</sub> g <sub>5</sub> c <sub>5</sub> a <sub>5</sub> c <sub>5</sub> g GccgaaagGCGaGuaaGGuCu ccaauu B	15955	Zinzyme
261	HCV+	CGAGUA G UGUUGG	7202	18796	c <sub>5</sub> c <sub>5</sub> a <sub>5</sub> a <sub>5</sub> ca GccgaaagGCGaGuaaGGuCu uacucg B	15956	Zinzyme
261	HCV+	CCGAGUA G UGUUGGG	7203	18797	c <sub>5</sub> c <sub>5</sub> a <sub>5</sub> aca GccgaaagGCGaGuaaGGuCu uacucgg B	15957	Zinzyme
263	HCV+	AGUAGU G UUGGGU	7204	18798	a <sub>5</sub> c <sub>5</sub> c <sub>5</sub> a <sub>5</sub> aa GccgaaagGCGaGuaaGGuCu acuacu B	15958	Zinzyme
271	HCV+	UGGGUC G CGAAAG	7205	18799	c <sub>5</sub> u <sub>5</sub> u <sub>5</sub> u <sub>5</sub> c <sub>5</sub> g GccgaaagGCGaGuaaGGuCu gaccaca B	15959	Zinzyme
283	HCV+	GGCCUU G UGGUAC	7206	18800	g <sub>5</sub> u <sub>5</sub> a <sub>5</sub> c <sub>5</sub> ca GccgaaagGCGaGuaaGGuCu aaggcc B	15960	Zinzyme
291	HCV+	GGUACU G CCUGAU	7207	18801	a <sub>5</sub> u <sub>5</sub> c <sub>5</sub> a <sub>5</sub> gg GccgaaagGCGaGuaaGGuCu aguacc B	15961	Zinzyme



318

319

139	HCV+	GAGAGCCAUAGUG	7278	22526	C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> U <sub>5</sub> AU CUGAUGAGGCGGUAAGGCCGAA Icucuc B	16032	Inozyme
140	HCV+	AGAGCCAUAGUGG	7279	22527	C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> UA CUGAUGAGGCGGUAAGGCCGAA Igucuc B	16033	Inozyme
281	HCV+	AAGGCCUUGUGGU	7280	22528	A <sub>5</sub> C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> GCA CUGAUGAGGCGGUAAGGCCGAA Igccuu B	16034	Inozyme
130	HCV+	CCUCCCGGGAGA	7281	22529	U <sub>5</sub> C <sub>5</sub> U <sub>5</sub> C <sub>5</sub> CC CUGAUGAGGCGGUAAGGCCGAA Igaggg B	16035	Inozyme
280	HCV+	AAAGGCCUUGUGG	7282	22530	C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> AA CUGAUGAGGCGGUAAGGCCGAA Iccuuu B	16036	Inozyme
149	HCV+	GUGGUUCUGCGGAA	7283	22531	U <sub>5</sub> U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> GC CUGAUGAGGCGGUAAGGCCGAA Iaccac B	16037	Inozyme
194	HCV+	GGGUCCUUCUUG	7284	22532	C <sub>5</sub> A <sub>5</sub> A <sub>5</sub> GGAA CUGAUGAGGCGGUAAGGCCGAA Igaccc B	16038	Inozyme
255	HCV+	GCUAGCCGAGUAG	7285	22533	C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> C <sub>5</sub> UC CUGAUGAGGCGGUAAGGCCGAA Icuagc B	16039	Inozyme
294	HCV+	ACUGCCUGAUAGG	7286	22534	C <sub>5</sub> C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> UC CUGAUGAGGCGGUAAGGCCGAA Igagcu B	16040	Inozyme
293	HCV+	UACUGCCUGAUAG	7287	22535	C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> U <sub>5</sub> GCA CUGAUGAGGCGGUAAGGCCGAA Icagua B	16041	Inozyme
290	HCV+	UGGUACUGCCUGA	7288	22536	U <sub>5</sub> C <sub>5</sub> A <sub>5</sub> GGGC CUGAUGAGGCGGUAAGGCCGAA Iuacca B	16042	Inozyme
169	HCV+	GUACACCGGAUU	7289	22537	A <sub>5</sub> A <sub>5</sub> U <sub>5</sub> U <sub>5</sub> CC CUGAUGAGGCGGUAAGGCCGAA Iuguac B	16043	Inozyme
293	HCV+	GUACUGCCUGAUAGG	7290	22544	C <sub>5</sub> C <sub>5</sub> U <sub>5</sub> A <sub>5</sub> UCA CUGAUGAGGCGGUAAGGCCGAA Icaguac B	16044	Inozyme
294	HCV+	UACUGCCUGAUAGGG	7291	22545	C <sub>5</sub> C <sub>5</sub> C <sub>5</sub> U <sub>5</sub> AUC CUGAUGAGGCGGUAAGGCCGAA Igccuuu B	16045	Inozyme
281	HCV+	AAAGGCCUUGUGGUA	7292	22546	U <sub>5</sub> A <sub>5</sub> C <sub>5</sub> A <sub>5</sub> ACA CUGAUGAGGCGGUAAGGCCGAA Igccuuu B	16046	Inozyme
166	HCV+	UGAGUACACCGGA	7293	22549	U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> GGU CUGAUGAGGCGGUAAGGCCGAA Uacuca B	16047	Amberzyme
168	HCV+	AGUACACCGGAU	7294	22550	A <sub>5</sub> U <sub>5</sub> U <sub>5</sub> C <sub>5</sub> CG CUGAUGAGGCGGUAAGGCCGAA Uguacu B	16048	Amberzyme
141	HCV+	GAGCCAUAGUGGU	7295	22551	A <sub>5</sub> C <sub>5</sub> C <sub>5</sub> A <sub>5</sub> CU CUGAUGAGGCGGUAAGGCCGAA Uggcuc B	16049	Amberzyme
156	HCV+	GCGBAACCGGUGA	7296	22552	U <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> CG CUGAUGAGGCGGUAAGGCCGAA Uuccgc B	16050	Amberzyme
155	HCV+	UGCGGAACCGGUG	7297	22553	C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> C <sub>5</sub> GG CUGAUGAGGCGGUAAGGCCGAA Uccgca B	16051	Amberzyme
289	HCV+	GUGGUACUGCCUG	7298	22554	C <sub>5</sub> A <sub>5</sub> GGGCA CUGAUGAGGCGGUAAGGCCGAA Uaccac B	16052	Amberzyme
297	HCV+	GCCUGAUAGGGUG	7299	22555	C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> C <sub>5</sub> CU CUGAUGAGGCGGUAAGGCCGAA Ucaggc B	16053	Amberzyme
166	HCV+	GUGAGUACACCGGA	7300	22556	U <sub>5</sub> U <sub>5</sub> C <sub>5</sub> C <sub>5</sub> GGU CUGAUGAGGCGGUAAGGCCGAA Uacucac B	16054	Amberzyme
141	HCV+	AGAGCCAUAGUGGUC	7301	22557	G <sub>5</sub> A <sub>5</sub> C <sub>5</sub> C <sub>5</sub> ACU CUGAUGAGGCGGUAAGGCCGAA Uggcucu B	16055	Amberzyme
156	HCV+	UGCGGAACCGGUGAG	7302	22558	C <sub>5</sub> U <sub>5</sub> C <sub>5</sub> A <sub>5</sub> CCG CUGAUGAGGCGGUAAGGCCGAA Uuccgca B	16056	Amberzyme
155	HCV+	UUGCGGAACCGGUGA	7303	22559	U <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> CGG CUGAUGAGGCGGUAAGGCCGAA Uccgcag B	16057	Amberzyme
289	HCV+	UGUGGUACUGCCUGA	7304	22560	U <sub>5</sub> C <sub>5</sub> A <sub>5</sub> GGGCA CUGAUGAGGCGGUAAGGCCGAA Uaccaca B	16058	Amberzyme
297	HCV+	UGCCUGAUAGGGUGC	7305	22561	G <sub>5</sub> C <sub>5</sub> A <sub>5</sub> C <sub>5</sub> CCU CUGAUGAGGCGGUAAGGCCGAA Ucaggca B	16059	Amberzyme
168	HCV+	GAGUACACCGGAUU	7306	22562	A <sub>5</sub> A <sub>5</sub> U <sub>5</sub> U <sub>5</sub> CCG CUGAUGAGGCGGUAAGGCCGAA Uguacuc B	16060	Amberzyme
166	HCV-	UCCGGUGUACUCA	7307	22563	U <sub>5</sub> G <sub>5</sub> A <sub>5</sub> GGUA gcccgaaggcGagugaGguCu accgga B	16061	Zinzyme
168	HCV-	AUUCGGUGUGUACU	7308	22564	A <sub>5</sub> G <sub>5</sub> U <sub>5</sub> A <sub>5</sub> CA gccgaaggcGagugaGguCu cggaaau B	16062	Zinzyme
138	HCV-	ACUAGGUCUCUCC	7309	22565	G <sub>5</sub> G <sub>5</sub> A <sub>5</sub> GGAG gccgaaggcGagugaGguCu cauagu B	16063	Zinzyme
156	HCV-	UCACGGGUUCCGC	7310	22566	G <sub>5</sub> C <sub>5</sub> GGGAA gccgaaggcGagugaGguCu cgguga B	16064	Zinzyme
236	HCV-	GCGGGGCACGCC	7311	22567	G <sub>5</sub> G <sub>5</sub> C <sub>5</sub> GGU gccgaaggcGagugaGguCu cccgc B	16065	Zinzyme
279	HCV-	CACAAGGCCUUDC	7312	22568	G <sub>5</sub> A <sub>5</sub> A <sub>5</sub> AGG gccgaaggcGagugaGguCu cuugug B	16066	Zinzyme

151	HCV-	GGUUCGCGAGACC	7313	22569	G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> C <sub>9</sub> ug gccgaaaggCgagugagGguCn ggaacc B	16067	Zinzyne
292	HCV-	UAUCAGGCAGUAC	7314	22570	G <sub>9</sub> U <sub>9</sub> A <sub>9</sub> C <sub>9</sub> ug gccgaaaggCgagugagGguCn cugaua B	16068	Zinzyne
289	HCV-	CAGGCAGUACCAC	7315	22571	G <sub>9</sub> U <sub>9</sub> G <sub>9</sub> G <sub>9</sub> ua gccgaaaggCgagugagGguCn ugccug B	16069	Zinzyne
166	HCV-	UUCCGGUGUACUCAC	7316	22572	G <sub>9</sub> U <sub>9</sub> G <sub>9</sub> A <sub>9</sub> gua gccgaaaggCgagugagGguCn accggaa B	16070	Zinzyne
279	HCV-	CCACAAGGCCUUCUG	7317	22573	C <sub>9</sub> G <sub>9</sub> A <sub>9</sub> A <sub>9</sub> agg gccgaaaggCgagugagGguCn cuugugg B	16071	Zinzyne
156	HCV-	CUCACCGGUUCGCA	7318	22574	U <sub>9</sub> G <sub>9</sub> C <sub>9</sub> G <sub>9</sub> gaa gccgaaaggCgagugagGguCn cggugag B	16072	Zinzyne
138	HCV-	CACUAUGGCUUCUCC	7319	22575	G <sub>9</sub> G <sub>9</sub> G <sub>9</sub> A <sub>9</sub> G <sub>9</sub> g gccgaaaggCgagugagGguCn cauagug B	16073	Zinzyne
151	HCV-	CGGUUCGCGAGACCA	7320	22576	U <sub>9</sub> G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> ug gccgaaaggCgagugagGguCn ggaaccg B	16074	Zinzyne
292	HCV-	CUAUCAGGCAGUACC	7321	22577	G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> A <sub>9</sub> C <sub>9</sub> ug gccgaaaggCgagugagGguCn cugauag B	16075	Zinzyne
289	HCV-	UCAGGCAGUACCACA	7322	22578	U <sub>9</sub> G <sub>9</sub> U <sub>9</sub> G <sub>9</sub> G <sub>9</sub> ua gccgaaaggCgagugagGguCn ugccuga B	16076	Zinzyne
168	HCV-	AAUUCGCGUGUACUC	7323	22579	G <sub>9</sub> A <sub>9</sub> G <sub>9</sub> U <sub>9</sub> aca gccgaaaggCgagugagGguCn cggaauu B	16077	Zinzyne
163	HCV-	GGUGUACUCACCG	7324	22580	C <sub>9</sub> G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> ga cUGAUGagggccguuaggccGaa Uacacc B	16078	Amberzyne
159	HCV-	UACUCACCGGUUC	7325	22581	G <sub>9</sub> A <sub>9</sub> A <sub>9</sub> C <sub>9</sub> cg cUGAUGagggccguuaggccGaa Uaguaa B	16079	Amberzyne
140	HCV-	CCACUAUGGCUCU	7326	22582	A <sub>9</sub> G <sub>9</sub> A <sub>9</sub> G <sub>9</sub> cc cUGAUGagggccguuaggccGaa Uagugg B	16080	Amberzyne
281	HCV-	ACCACAAGGCCUU	7327	22583	A <sub>9</sub> A <sub>9</sub> G <sub>9</sub> G <sub>9</sub> cc cUGAUGagggccguuaggccGaa Uguugu B	16081	Amberzyne
233	HCV-	GGGGCACGCCCAA	7328	22584	U <sub>9</sub> U <sub>9</sub> G <sub>9</sub> G <sub>9</sub> g <sub>9</sub> c cUGAUGagggccguuaggccGaa Ugcccc B	16082	Amberzyne
143	HCV-	AGACCACUAUGGC	7329	22585	G <sub>9</sub> C <sub>9</sub> A <sub>9</sub> G <sub>9</sub> ua cUGAUGagggccguuaggccGaa Uggucu B	16083	Amberzyne
146	HCV-	CGCAGACCACUAU	7330	22586	A <sub>9</sub> U <sub>9</sub> A <sub>9</sub> G <sub>9</sub> ug cUGAUGagggccguuaggccGaa Ucuugc B	16084	Amberzyne
195	HCV-	CCAAGAAAGGACC	7331	22587	G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> C <sub>9</sub> cu cUGAUGagggccguuaggccGaa Ucuugg B	16085	Amberzyne
194	HCV-	CAAGAAAGGACCC	7332	22588	G <sub>9</sub> G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> cc cUGAUGagggccguuaggccGaa Ucuuug B	16086	Amberzyne
283	HCV-	GUACCACAAGGCC	7333	22589	G <sub>9</sub> G <sub>9</sub> C <sub>9</sub> A <sub>9</sub> uu cUGAUGagggccguuaggccGaa Ugguaa B	16087	Amberzyne
286	HCV-	GCAGUACCACAAG	7334	22590	C <sub>9</sub> U <sub>9</sub> U <sub>9</sub> G <sub>9</sub> ug cUGAUGagggccguuaggccGaa Uacugc B	16088	Amberzyne
296	HCV-	ACCCUAUCAGGCA	7335	22591	U <sub>9</sub> G <sub>9</sub> C <sub>9</sub> C <sub>9</sub> ug cUGAUGagggccguuaggccGaa Uagggg B	16089	Amberzyne
190	HCV-	AAAGGACCCGGUC	7336	22592	G <sub>9</sub> A <sub>9</sub> C <sub>9</sub> A <sub>9</sub> G <sub>9</sub> g cUGAUGagggccguuaggccGaa Uccuuu B	16090	Amberzyne
163	HCV-	CGGUGUACUCACCGG	7337	22593	C <sub>9</sub> C <sub>9</sub> G <sub>9</sub> G <sub>9</sub> uga cUGAUGagggccguuaggccGaa Uacaccg B	16091	Amberzyne
140	HCV-	ACCACUAUGGCUCUC	7338	22594	G <sub>9</sub> A <sub>9</sub> G <sub>9</sub> A <sub>9</sub> G <sub>9</sub> cc cUGAUGagggccguuaggccGaa Uaguggu B	16092	Amberzyne
159	HCV-	GUACUCACCGGUUCC	7339	22595	G <sub>9</sub> G <sub>9</sub> A <sub>9</sub> A <sub>9</sub> ccg cUGAUGagggccguuaggccGaa Uaguuac B	16093	Amberzyne
233	HCV-	GGGGGCACGCCCAA	7340	22596	U <sub>9</sub> U <sub>9</sub> U <sub>9</sub> G <sub>9</sub> ggc cUGAUGagggccguuaggccGaa Ugcccc B	16094	Amberzyne
143	HCV-	CAGACCACUAUGGCU	7341	22597	A <sub>9</sub> G <sub>9</sub> C <sub>9</sub> A <sub>9</sub> ua cUGAUGagggccguuaggccGaa Uggucug B	16095	Amberzyne
146	HCV-	CCGACAGCACUAUG	7342	22598	C <sub>9</sub> A <sub>9</sub> U <sub>9</sub> A <sub>9</sub> G <sub>9</sub> ug cUGAUGagggccguuaggccGaa Ucuugcg B	16096	Amberzyne
195	HCV-	UCCAAGAAAGGACCC	7343	22599	G <sub>9</sub> G <sub>9</sub> G <sub>9</sub> U <sub>9</sub> ccu cUGAUGagggccguuaggccGaa Ucuugga B	16097	Amberzyne
283	HCV-	AGUACCACAAGGCCU	7344	22600	A <sub>9</sub> G <sub>9</sub> G <sub>9</sub> C <sub>9</sub> uu cUGAUGagggccguuaggccGaa Ugguaa B	16098	Amberzyne
281	HCV-	UACCACAAGGCCUUU	7345	22601	A <sub>9</sub> A <sub>9</sub> A <sub>9</sub> G <sub>9</sub> G <sub>9</sub> cc cUGAUGagggccguuaggccGaa Uguggua B	16099	Amberzyne
296	HCV-	CACCCUAUCAGGCAG	7346	22602	C <sub>9</sub> U <sub>9</sub> G <sub>9</sub> C <sub>9</sub> ug cUGAUGagggccguuaggccGaa Uagggug B	16100	Amberzyne
286	HCV-	GGCAGUACCACAAGG	7347	22603	C <sub>9</sub> C <sub>9</sub> U <sub>9</sub> A <sub>9</sub> G <sub>9</sub> ug cUGAUGagggccguuaggccGaa Uacugcc B	16101	Amberzyne

7985	HCV-	UUCAGU G UCUUCCA	7348	22719	uggaaga uGAUg gcaugGcacuaugc gCg acugaga B	16102	G-cleaver
4832	HCV-	UGUAU G CCUCUCC	7349	22720	ggagaag uGAUg gcaugGcacuaugc gCg auauaca B	16103	G-cleaver
4153	HCV-	ACCUGU G CCUUGA	7350	22721	uccaagg uGAUg gcaugGcacuaugc gCg acacggg B	16104	G-cleaver
3200	HCV-	GUGGAGU G AGUGGU	7351	22722	accacuu uGAUg gcaugGcacuaugc gCg acuccac B	16105	G-cleaver
1682	HCV-	AGGAGU G AACUGU	7352	22723	acagggu uGAUg gcaugGcacuaugc gCg aacucgu B	16106	G-cleaver
896	HCV+	CCUGUCU G ACCAUCC	7353	22724	ggauggu uGAUg gcaugGcacuaugc gCg agacagg B	16107	G-cleaver
2504	HCV+	UCCUGUU G CUUUUCC	7354	22725	ggaaaag uGAUg gcaugGcacuaugc gCg aacagga B	16108	G-cleaver
2651	HCV+	UCCUGU G UUCUUCU	7355	22726	agaagaa uGAUg gcaugGcacuaugc gCg acgagga B	16109	G-cleaver
4094	HCV+	ACAAAGU G CUGGUCC	7356	22727	ggacgag uGAUg gcaugGcacuaugc gCg acuuugu B	16110	G-cleaver
8970	HCV+	GCCACU G ACCUACC	7357	22728	gguaggu uGAUg gcaugGcacuaugc gCg aaguggc B	16111	G-cleaver
1200	HCV+	CUUCCUC G UCUCUCA	7358	22747	ugagaga gccgaaaggcgagugagGGuCu gaggaag B	16112	Zinzyne
1211	HCV+	CUCAGCU G UUCACCU	7359	22748	aggugaa gccgaaaggcgagugagGGuCu agcugag B	16113	Zinzyne
2504	HCV+	UCCUGUU G CUUUUCC	7354	22749	ggaaaag gccgaaaggcgagugagGGuCu aacagga B	16114	Zinzyne
2651	HCV+	UCCUGU G UUCUUCU	7355	22750	agaagaa gccgaaaggcgagugagGGuCu acgagga B	16115	Zinzyne
8811	HCV+	CACUCCA G UCAACUC	7360	22751	gaguuga gccgaaaggcgagugagGGuCu ugagug B	16116	Zinzyne
8594	HCV-	UGGCCG G UCCUCUU	7361	22752	aagagga gccgaaaggcgagugagGGuCu gcggcga B	16117	Zinzyne
7985	HCV-	UUCAGU G UCUUCCA	7348	22753	uggaaga gccgaaaggcgagugagGGuCu acugaga B	16118	Zinzyne
6611	HCV-	CUCCAC G UACUCCU	7362	22754	aggagua gccgaaaggcgagugagGGuCu guggagg B	16119	Zinzyne
5633	HCV-	UCCACAU G UGUUUG	7363	22755	cgaagca gccgaaaggcgagugagGGuCu augugga B	16120	Zinzyne
821	HCV-	UCACGCC G UCUUCCA	7364	22756	uggaaga gccgaaaggcgagugagGGuCu ggcguga B	16121	Zinzyne
870	HCV+	CUCUAC U UCCUCUU	7365	22775	aagagga CUGAUGAGgcccguuaggccGAA Iauagag B	16122	Inozyme
1210	HCV+	UUCAGC U GUUACCC	7367	22776	ggugaac CUGAUGAGgcccguuaggccGAA Iagagga B	16123	Inozyme
2642	HCV+	UCCUCU C UCCUUG	7367	22777	cgaggaa CUGAUGAGgcccguuaggccGAA Iagagga B	16124	Inozyme
5726	HCV+	CUCCAC C UUCUCCA	7368	22778	ugaugaa CUGAUGAGgcccguuaggccGAA Icuugga B	16125	Inozyme
8142	HCV+	CUCCACC C UUCUCCA	7369	22779	ugaggaa CUGAUGAGgcccguuaggccGAA Igugag B	16126	Inozyme
7990	HCV-	UGGUGU U CAGUGUC	7370	22780	gacacug CUGAUGAGgcccguuaggccGAA Iacacca B	16127	Inozyme
7813	HCV-	CUUCGCC U UCAUCUC	7371	22781	gagauga CUGAUGAGgcccguuaggccGAA Igcaag B	16128	Inozyme
7137	HCV-	ACCUCU U CUCAUCC	7372	22782	ggauag CUGAUGAGgcccguuaggccGAA Iagaggu B	16129	Inozyme
6084	HCV-	UUCAUCC A CUGCACA	7373	22783	ugugcag CUGAUGAGgcccguuaggccGAA Igauaga B	16130	Inozyme
2554	HCV-	CAACAGC A UCAUCCA	7374	22784	uggauga CUGAUGAGgcccguuaggccGAA Icuugug B	16131	Inozyme
1202	HCV+	UCCUCGU C UCUCAGC	7375	22943	uccugua CUGAUGAGgcccguuaggccGAA Augugcc B	16132	Hammerhead
1607	HCV+	GGCACU U AACAGGA	7376	22944	ggaagga CUGAUGAGgcccguuaggccGAA Aggaugc B	16133	Hammerhead
2639	HCV+	GCAUCCU C UCUUCC	7377	22945	cuccacg CUGAUGAGgcccguuaggccGAA Acuccuc B	16134	Hammerhead
6610	HCV+	GAGGAGU A CGUGGAG	7378	22946	ggaguga CUGAUGAGgcccguuaggccGAA Aaugcgc B	16135	Hammerhead
9014	HCV+	GGGCAU U UCAUCC	7379	22947	ggagcc CUGAUGAGgcccguuaggccGAA Acgaguc B	16136	Hammerhead
8605	HCV-	GACUCGU A GGCUCGC	7380	22948	gcugaa CUGAUGAGgcccguuaggccGAA Acacuga B	16137	Hammerhead
7983	HCV-	UCAGUGU C UUCAGC	7381	22949	aggaua CUGAUGAGgcccguuaggccGAA Agagagg B	16138	Hammerhead
7136	HCV-	CCUCUCU C UCAUCCU	7382	22950	ugaggag CUGAUGAGgcccguuaggccGAA Acgugga B	16139	Hammerhead
6609	HCV-	UCCACGU A CUCUCCA	7383	22951	gacugua CUGAUGAGgcccguuaggccGAA Augcacg B	16140	Hammerhead
6292	HCV-	CGUGCAU A UCCAGUC	7384	22952	aggaaga GGCTAGCTACACGA agagaaa B	16141	Hammerhead
867	HCV+	UUUCUCU A UCUUCCU	7385	22971	ugagaga GGCTAGCTACACGA gaggaag B	16142	DNAzyme
1200	HCV+	UUUCCU G UCUUCCA	7385	22972	aggugaa GGCTAGCTACACGA agcugag B	16143	DNAzyme
1211	HCV+	CUCCAGU G UUCACCU	7359	22973	cugguga GGCTAGCTACACGA ggaaggu B	16144	DNAzyme
5730	HCV+	AGCCUCC A UCACACG	7386	22974	uggugua GGCTAGCTACACGA gcuugua B	16145	DNAzyme
6533	HCV+	UCAACGC A UACACCA	7387	22975		16146	DNAzyme

8594	HCV-	UCGCCGC G UCCUCUU	7361	22976	aagagga GGCTAGCTACAACGA gcggcga B	16147	DNazyme
7810	HCV-	CGCCUUC A UCUCCUU	7388	22977	aagagga GGCTAGCTACAACGA gaagcgcg B	16148	DNazyme
7133	HCV-	CUCUCUC A UCCUCCU	7389	22978	aggagga GGCTAGCTACAACGA gagagag B	16149	DNazyme
6611	HCV-	CCUCCAC G UACUCCU	7362	22979	aggagga GGCTAGCTACAACGA guggagg B	16150	DNazyme
2300	HCV-	CCUCCAA A UCACAAAC	7390	22980	guuguga GGCTAGCTACAACGA uuggagg B	16151	DNazyme
195	HCV+	GGGUCCU U UCUUGGA	7148	23072	c <sub>8</sub> c <sub>5</sub> a <sub>8</sub> a <sub>8</sub> sga cUGAuGaggcgWWagccGaa Aggacc B	16152	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	23076	WWWMC <sub>8</sub> c <sub>5</sub> a <sub>8</sub> a <sub>8</sub> ga cUGAuGaggcguuagccGaa Aggacc B	16153	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	23077	WWWc <sub>8</sub> c <sub>5</sub> a <sub>8</sub> a <sub>8</sub> ga cUGAuGaggcgWWagccGaa Aggacc B	16154	Hammerhead
195	HCV+	GGGUCCU U UCUUGGA	7148	23086	c <sub>8</sub> c <sub>5</sub> a <sub>8</sub> a <sub>8</sub> sga cUGAuGaggcgWWagccGaa Aggacc B	16155	Hammerhead

lower case = 2'-O-methyl

UPPER CASE = RIBO

B = inverted deoxy abasic

U = 2'-deoxy-2'-amino Uridine

C = 2'-deoxy-2'-amino Cytidine

U = 2'-deoxy-2'-amino Uridine

Z = BRdU (5-bromo-2'-deoxy Uridine)

W = acyclic galactose-amine linker

UNDERLINE = deoxy nucleotide

**TABLE XXI: ANTI HCV AMINO CONTAINING HAMMERHEAD RIBOZYME AND CONTROL SEQUENCES**

pos	RPI#	HCV 5'UTR Site	Ribozyme Sequences (5'-3')	Core	Rz Seq ID
62	12257	HCV-62	g <sub>s</sub> c <sub>s</sub> g <sub>s</sub> ugaa cUGAUGaggccguuaggccGaa AcaguagB	Active	15897
79	12258	HCV-79	a <sub>s</sub> u <sub>s</sub> g <sub>s</sub> gcua cUGAUGaggccguuaggccGaa AcgcuuB	Active	15898
81	12249	HCV-81	c <sub>s</sub> c <sub>s</sub> a <sub>s</sub> uggc cUGAUGaggccguuaggccGaa AgacgcuB	Active	15899
104	12259	HCV-104	g <sub>s</sub> c <sub>s</sub> u <sub>s</sub> gcac cUGAUGaggccguuaggccGaa AcacucaB	Active	15900
142	12250	HCV-142	a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> ccac cUGAUGaggccguuaggccGaa AuggcucB	Active	15901
148	12251	HCV-148	u <sub>s</sub> u <sub>s</sub> c <sub>s</sub> cgca cUGAUGaggccguuaggccGaa AccacuaB	Active	15902
165	12260	HCV-165	u <sub>s</sub> c <sub>s</sub> c <sub>s</sub> ggug cUGAUGaggccguuaggccGaa AcucaccB	Active	15903
192	12261	HCV-192	a <sub>s</sub> a <sub>s</sub> g <sub>s</sub> aaag cUGAUGaggccguuaggccGaa AcccgguB	Active	15904
195	12252	HCV-195	u <sub>s</sub> c <sub>s</sub> c <sub>s</sub> aaga cUGAUGaggccguuaggccGaa AggaccB	Active	15905
196	12262	HCV-196	a <sub>s</sub> u <sub>s</sub> c <sub>s</sub> caag cUGAUGaggccguuaggccGaa AaggaccB	Active	15906
270	12263	HCV-270	c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> ucgc cUGAUGaggccguuaggccGaa AcccaacB	Active	15907
282	12264	HCV-282	g <sub>s</sub> u <sub>s</sub> a <sub>s</sub> ccac cUGAUGaggccguuaggccGaa AggccuB	Active	15908
306	12265	HCV-306	c <sub>s</sub> a <sub>s</sub> c <sub>s</sub> ucgc cUGAUGaggccguuaggccGaa AgcaccB	Active	15909
325	12253	HCV-325	u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> acga cUGAUGaggccguuaggccGaa AccuccB	Active	15910
330	12254	HCV-330	c <sub>s</sub> a <sub>s</sub> c <sub>s</sub> gguc cUGAUGaggccguuaggccGaa AcgagacB	Active	15911
<b>Control Sequences</b>					
79	13274	HCV-79 AC2	c <sub>s</sub> u <sub>s</sub> u <sub>s</sub> aggu cUAGUGaggccguuaggccGau AguucucB	Attenuated	16171
81	13271	HCV-81 AC	u <sub>s</sub> c <sub>s</sub> u <sub>s</sub> ggccg cUAGUGaggccguuaggccGau AgugaccB	Attenuated	16172
142	13270	HCV-142 AC	a <sub>s</sub> a <sub>s</sub> c <sub>s</sub> ccug cUAGUGaggccguuaggccGau AgcucguB	Attenuated	16173
192	13272	HCV-192 AC	a <sub>s</sub> g <sub>s</sub> u <sub>s</sub> agaa cUAGUGaggccguuaggccGau AgcugccB	Attenuated	16174
195	13269	HCV-195 AC	g <sub>s</sub> a <sub>s</sub> u <sub>s</sub> ucca cUAGUGaggccguuaggccGau AcgcgacB	Attenuated	16175
282	13273	HCV-282 AC	g <sub>s</sub> c <sub>s</sub> c <sub>s</sub> auuc cUAGUGaggccguuaggccGau AucuggcB	Attenuated	16176
330	13268	HCV-330 AC	c <sub>s</sub> c <sub>s</sub> a <sub>s</sub> ggcu cUAGUGaggccguuaggccGau AaugcgB	Attenuated	16177
195	15291	HCV-195 BAC3	u <sub>s</sub> c <sub>s</sub> c <sub>s</sub> aaga cUAGUGacgccguuaggcgGaa AggaccB	Attenuated	16178
195	15292	HCV-195 SAC3	a <sub>s</sub> g <sub>s</sub> a <sub>s</sub> cuac cUAGUGacgccguuaggcgGaa AcccgagB	Attenuated	16179
330	15294	HCV-330 BAC	c <sub>s</sub> a <sub>s</sub> c <sub>s</sub> gguc cUAGUGacgccguuaggcgGaa AcgagacB	Attenuated	16180
330	15295	HCV-330 SAC	g <sub>s</sub> c <sub>s</sub> u <sub>s</sub> ccga cUAGUGacgccguuaggcgGaa AgacacB	Attenuated	16181

UPPER CASE = RIBO; lower case = 2'-O-methyl; B = inverted deoxyabasic;

s = phosphorothioate linkage

U = 2'-deoxy-2'-amino uridine

**TABLE XXII: ANTI HCV SITE 330 ANTISENSE NUCLEIC ACID AND  
SCRAMBLED CONTROL SEQUENCES**

pos	RPI #	Alias	Antisense Nucleic Acid	Seq ID #
330	17501	HCV.5-330 antisense	G <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> T <sub>s</sub> C <sub>s</sub> A <sub>s</sub> T <sub>s</sub> G <sub>s</sub> A <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> A <sub>s</sub> C <sub>s</sub> G <sub>s</sub> G <sub>s</sub> T <sub>s</sub> C <sub>s</sub> T	15898
330	17498	HCV.5-330 antisense	G <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> T <sub>s</sub> C <sub>s</sub> A <sub>s</sub> T <sub>s</sub> G <sub>s</sub> G <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> A <sub>s</sub> C <sub>s</sub> G <sub>s</sub> G <sub>s</sub> T <sub>s</sub> C <sub>s</sub> T	16182

pos	RPI#	Alias	Control Sequence	Seq ID #
330	17499	HCV.5-330 scrambled	T <sub>s</sub> G <sub>s</sub> A <sub>s</sub> T <sub>s</sub> C <sub>s</sub> A <sub>s</sub> G <sub>s</sub> G <sub>s</sub> T <sub>s</sub> C <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> G <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C	16183
330	17502	HCV.5-330 Scrambled	T <sub>s</sub> G <sub>s</sub> A <sub>s</sub> T <sub>s</sub> C <sub>s</sub> A <sub>s</sub> G <sub>s</sub> G <sub>s</sub> T <sub>s</sub> C <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C <sub>s</sub> A <sub>s</sub> T <sub>s</sub> G <sub>s</sub> C	16184

UPPER CASE = Deoxy Nucleotide  
s = phosphorothioate



TABLE XXIII: IN VITRO CLEAVAGE DATA, ANTI-HCV ENZYMATIC NUCLEIC ACIDS

Seq ID #	RPI#	Motif	Site (+/-)	Enzymatic Nucleic Acid Sequence	% Substrate Cleaved in 3 hours	Substrate Sequence	Seq ID #	Substrate RPI#
16132	22943	Hammerhead	1190 (+)	gcugaga CUGAUGAggcccguuagccGAA Acgagga B	89.67	UCCUCGU C UCUCAGC B	7391	22897
16133	22944	Hammerhead	1595 (+)	uccuguu CUGAUGAggcccguuagccGAA Augugcc B	90.33	GGCACAU U AACAGGA B	7392	22898
16134	22945	Hammerhead	2627 (+)	ggaagga CUGAUGAggcccguuagccGAA Aggaugc B	82.54	GCAUCCU C UCCUUC B	7393	22899
16135	22946	Hammerhead	6598 (+)	cuccacg CUGAUGAggcccguuagccGAA Acuccuc B	78.06	GAGGAGU A CGUGGAG B	7394	22900
16136	22947	Hammerhead	9002 (+)	ggaguga CUGAUGAggcccguuagccGAA Aaugcgc B	81.88	GCACAUU U UCACUCC B	7395	22901
16137	22948	Hammerhead	818 (-)	gcgagcc CUGAUGAggcccguuagccGAA Acgaguc B	88.34	GACUCGU A GGCUCGC B	7396	22902
16138	22949	Hammerhead	1440 (-)	gcuggaa CUGAUGAggcccguuagccGAA Acacuga B	89.16	UCAGUGU C UUCAGC B	7397	22903
16139	22950	Hammerhead	2287 (-)	aggauga CUGAUGAggcccguuagccGAA Agagagg B	83.43	CCUCUGU C UCAUCGU B	7398	22904
16140	22951	Hammerhead	2814 (-)	ugaggag CUGAUGAggcccguuagccGAA Acgugga B	83.25	UCCACGU A CUCCUGA B	7399	22905
16141	22952	Hammerhead	3131 (-)	gacugga CUGAUGAggcccguuagccGAA Augcacg B	86.96	CGUGCAU A UCCAGUC B	7400	22906
16142	22971	DNazyme	855 (+)	aggaaga GGCTAGCTACAACGA agagaaa B	92.11	UUUCUCU A UCUUCGU B	7401	22925
16143	22972	DNazyme	1188 (+)	ugagaga GGCTAGCTACAACGA gaggag B	86.38	CUUCCUC G UCUCUGA B	7402	22926
16144	22973	DNazyme	1199 (+)	aggugaa GGCTAGCTACAACGA agcugag B	83.15	CUCAGCU G UUCACGU B	7403	22927
16145	22974	DNazyme	5718 (+)	cugguga GGCTAGCTACAACGA ggaggcu B	57.82	AGCCUCC A UCACCAG B	7404	22928
16146	22975	DNazyme	6521 (+)	uggugua GGCTAGCTACAACGA gcuuga B	75.77	UCAAGC A UACACCA B	7405	22929
16147	22976	DNazyme	829 (-)	aagagga GGCTAGCTACAACGA gcggcga B	66.06	UCGCCGC G UCCUCUU B	7406	22930
16148	22977	DNazyme	1613 (-)	aaggaga GGCTAGCTACAACGA gaaggcg B	71.28	CGCCUUC A UCUCUU B	7407	22931
16149	22978	DNazyme	2290 (-)	aggagga GGCTAGCTACAACGA gagagag B	61.60	CUCUCUC A UCCUCUU B	7408	22932
16150	22979	DNazyme	2812 (-)	aggagua GGCTAGCTACAACGA guggagg B	85.53	CCUCCAC G UACUCGU B	7409	22933
16151	22980	DNazyme	7123 (-)	guuguga GGCTAGCTACAACGA uuggagg B	34.60	CCUCCAA A UCACAAC B	7410	22934
16102	22719	G-cleaver	1438 (+)	uggaaga uGAUg gcauGcauauugc gCg acugaga B	69.88	UCUCAGU G UCUUCCA B	7411	22813
16103	22720	G-cleaver	4591 (+)	ggagagg uGAUg gcauGcauauugc gCg aluauaca B	77.74	UGUAUJU G CCUCUCC B	7412	22814
16104	22721	G-cleaver	5270 (+)	ucuaaag uGAUg gcauGcauauugc gCg acacggg B	47.37	ACCGUGU G CCUJAGA B	7413	22815
16105	22722	G-cleaver	6223 (+)	accacuu uGAUg gcauGcauauugc gCg acuccac B	75.84	GUGGAGU G AGGUGGU B	7414	22816
16106	22723	G-cleaver	7741 (+)	acagguu uGAUg gcauGcauauugc gCg aacucgu B	61.58	ACGAGUU G AACCUUG B	7415	22817
16107	22724	G-cleaver	884 (-)	ggauggu uGAUg gcauGcauauugc gCg agacagg B	65.16	CCUGUCU G ACCAUCC B	7416	22818
16108	22725	G-cleaver	2492 (-)	ggaaag uGAUg gcauGcauauugc gCg aacaggga B	94.66	UCCUGU G CUUUUCC B	7417	22819
16109	22726	G-cleaver	2639 (-)	agaagaa uGAUg gcauGcauauugc gCg acgaggga B	82.14	UCCUCGU G UUCUUCU B	7418	22820

MBHB02,249-PCT 400.042

16110	22727	G-cleaver	4082 (-)	ggacgag uGAlg gcauGcacuaugc gCg acuuugu B	67.20	ACAAAGU G CUGGUCC B	7419	22821
16111	22728	G-cleaver	8958 (-)	gguaugu uGAlg gcauGcacuaugc gCg aaguggc B	81.06	GCCACUU G ACCUACC B	7420	22822

16112	22747	Zinzyme	1188 (+)	ugagaga gccgaaaggCgagugaGGuCu gaggaag B	66.11	CUUCCUC G UCUCUCA B	7402	22841
16113	22748	Zinzyme	1199 (+)	agguaga gccgaaaggCgagugaGGuCu agcugag B	80.28	CUCAGCU G UUCACCU B	7403	22842
16114	22749	Zinzyme	2492 (+)	ggaaag gccgaaaggCgagugaGGuCu aacagga B	90.80	UCCUGUU G CUUUUCC B	7417	22843
16115	22750	Zinzyme	2639 (+)	agaaga gccgaaaggCgagugaGGuCu acgagga B	80.64	UCCUGCU G UUCUUCU B	7418	22844
16116	22751	Zinzyme	8799 (+)	gguuga gccgaaaggCgagugaGGuCu ugagug B	14.85	CACUCA G UCAACUC B	7421	22845
16117	22752	Zinzyme	829 (-)	aagaga gccgaaaggCgagugaGGuCu gccgoga B	27.83	UGCGCG G UCCUCUU B	7406	22846
16118	22753	Zinzyme	1438 (-)	uggaaga gccgaaaggCgagugaGGuCu acugaga B	89.39	UCUCAGU G UCUCUCA B	7411	22847
16119	22754	Zinzyme	2812 (-)	aggaga gccgaaaggCgagugaGGuCu guggagg B	50.40	CCUCAC G UACUCCU B	7409	22848
16120	22755	Zinzyme	3790 (-)	cgaaga gccgaaaggCgagugaGGuCu augugga B	81.10	UCCACAU G UGCUUCG B	7422	22849
16121	22756	Zinzyme	8602 (-)	uggaaga gccgaaaggCgagugaGGuCu gccguga B	73.47	UCACGCC G UCUCUCA B	7423	22850

16122	22775	Inozyme	858 (+)	aagaga CUGAUGAggcccguuaggccGAA laugag B	87.74	CUCUAUC U UCCUCUU B	7424	22869
16123	22776	Inozyme	1198 (+)	gguaac CUGAUGAggcccguuaggccGAA lcugaga B	84.55	UCUCAGC U GUUCACC B	7425	22870
16124	22777	Inozyme	2630 (+)	cagaga CUGAUGAggcccguuaggccGAA lagagga B	90.12	UCCUCUC C UUCUCCG B	7426	22871
16125	22778	Inozyme	5714 (+)	ugaaga CUGAUGAggcccguuaggccGAA lcuguga B	83.77	UCACAGC C UCCAUCA B	7427	22872
16126	22779	Inozyme	8130 (+)	ugagaa CUGAUGAggcccguuaggccGAA lguggag B	82.22	CUCACC C UUCUCCU B	7428	22873
16127	22780	Inozyme	1433 (-)	gacacug CUGAUGAggcccguuaggccGAA lacacca B	87.33	UGGUGUC U CAGUGUC B	7429	22874
16128	22781	Inozyme	1610 (-)	gagauga CUGAUGAggcccguuaggccGAA lgcgaag B	70.67	CUUGGCC U UCAUCUC B	7430	22875
16129	22782	Inozyme	2286 (-)	ggaugag CUGAUGAggcccguuaggccGAA lagaggu B	78.83	ACCUCUC U CUCAUCC B	7431	22876
16130	22783	Inozyme	3339 (-)	ugugcag CUGAUGAggcccguuaggccGAA lgaugaa B	86.93	UUCAUCC A CUGCACA B	7432	22877
16131	22784	Inozyme	6869 (-)	uggauga CUGAUGAggcccguuaggccGAA lcugaug B	90.41	CAACAGC A UCAUCCA B	7433	22878

In vitro cleavage in 50 mM Tris-Cl, pH 8.0, 40 mM Mg<sup>2+</sup> at 37°, using trace substrate, and enzymatic nucleic acid concentration of 500 nM or greater.

UPPER CASE = RIBO

UNDERLINED = DEOXY

lower case = 2'-O-methyl

B = inverted deoxybasic

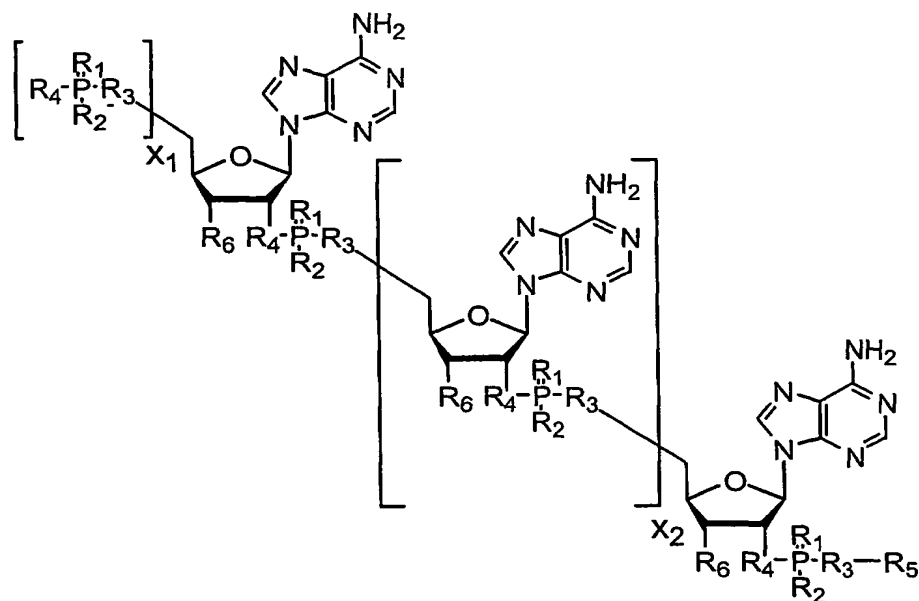
C = 2'-amino C

(+/-) = plus strand/minus strand of HCV genome

## CLAIMS

What we claim is:

1. A compound having Formula I:



- 5 wherein  $X_1$  is an integer selected from the group consisting of 1, 2, and 3;  $X_2$  is an integer greater than or equal to 1;  $R_6$  is independantly selected from the group consisting of H, OH,  $NH_2$ , O  $NH_2$ , alkyl, S-alkyl, O-alkyl, O-alkyl-S-alkyl, O-alkoxyalkyl, allyl, O-allyl, and fluoro; each  $R_1$  and  $R_2$  are independantly selected from the group consisting of O and S; each  $R_3$  and  $R_4$  are independantly selected from the group consisting of O, N, and S; and  $R_5$   
10 is selected from the group consisting of alkyl, alkylamine, oligonucleotide having any of SEQ ID NOS. 11343-16182, oligonucleotide having a sequence complementary to any of SEQ ID NOS. 2594-7433, and abasic moiety.
2. The compound of claim 1, wherein said oligonucleotide having a sequence complementary to any of SEQ ID NOS. 2594-7433 is an enzymatic nucleic acid molecule.
- 15 3. The compound of claim 1, wherein said oligonucleotide having a sequence complementary to any of SEQ ID NOS. 2594-7433 is an antisense nucleic acid molecule.

4. The compound of claim 2, wherein said enzymatic nucleic acid molecule is selected from the group consisting of Hammerhead, Inozyme, G-cleaver, DNzyme, Amberzyme, and Zinzyme motifs.
- 5 5. The compound of claim 2, wherein said Inozyme enzymatic nucleic acid molecule comprises a stem II region of length greater than or equal to 2 base pairs.
6. The compound of claim 2, wherein said enzymatic nucleic acid comprises between 12 and 100 bases complementary to an RNA derived from HCV.
7. The compound of claim 2, wherein said enzymatic nucleic acid comprises between 14 and 24 bases complementary to an RNA derived from HCV.
- 10 8. The compound of claim 3, wherein said antisense nucleic acid comprises between 12 and 100 bases complementary to an RNA derived from HCV.
9. The compound of claim 3, wherein said antisense nucleic acid comprises between 14 and 24 bases complementary to an RNA derived from HCV.
- 15 10. A composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.
11. A mammalian cell comprising a compound of claim 1.
12. The mammalian cell of claim 11, wherein said mammalian cell is a human cell.
13. A method for treatment of cirrhosis, liver failure, hepatocellular carcinoma, or a condition associated with HCV infection comprising the step of administering to a patient a compound of claim 1 under conditions suitable for said treatment.
- 20 14. The method of claim 13 further comprising the use of one or more drug therapies under conditions suitable for said treatment.
15. A method for inhibiting HCV replication in a mammalian cell comprising the step of administering to said cell the compound of claim 1 under conditions suitable for said inhibition.
- 25

16. A method of cleaving a separate RNA molecule comprising contacting the compound of claim 1 with said separate RNA molecule under conditions suitable for the cleavage of said separate RNA molecule.
17. The method of claim 16, wherein said cleavage is carried out in the presence of a divalent cation.
18. The method of claim 17, wherein said divalent cation is  $Mg^{2+}$ .
19. The method of claim 16, wherein said cleavage is carried out in the presence of a protein nuclease.
20. The method of claim 19, wherein said protein nuclease is an RNase L.
21. The compound of claim 1, wherein said compound is chemically synthesized.
22. The compound of claim 1, wherein said oligonucleotide comprises at least one 2'-sugar modification.
23. The compound of claim 1, wherein said oligonucleotide comprises at least one nucleic acid base modification.
24. The compound of claim 1, wherein said oligonucleotide comprises at least one phosphate modification.
25. The method of claim 14, wherein said drug therapy is the administration of type I interferon.
26. The method of claim 25, wherein said type I interferon and the compound of claim 1 are administered simultaneously.
27. The method of claim 25, wherein said type I interferon and the compound of claim 1 are administered separately.
28. The method of claim 25, wherein said type I interferon is selected from the group consisting of interferon alpha, interferon beta, consensus interferon, polyethylene glycol interferon,

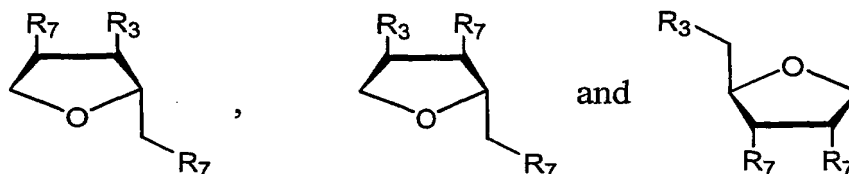
polyethylene glycol interferon alpha 2a, polyethylene glycol interferon alpha 2b, and polyethylene glycol consensus interferon.

29. The method of claim 14, wherein  $R_5$  in said compound is selected from the group consisting of alkyl, alkylamine and abasic moiety and said drug therapy comprises treatment with an enzymatic nucleic acid molecule which is targeted against HCV replication.

30. The method of claim 14, wherein  $R_5$  in said compound is selected from the group consisting of alkyl, alkylamine and abasic moiety and said drug therapy comprises treatment with an antisense nucleic acid molecule which is targeted against HCV replication.

31. A composition comprising type I interferon and the compound of claim 1 and a pharmaceutically acceptable carrier.

32. The compound of claim 1, wherein said abasic moiety is selected from the group consisting of:



wherein  $R_3$  is selected from the group consisting of S, N, or O and  $R_7$  is independently selected from the group consisting of H, OH, NH<sub>2</sub>, O-NH<sub>2</sub>, alkyl, S-alkyl, O-alkyl, O-alkyl-S-alkyl, O-alkoxyalkyl, allyl, O-allyl, fluoro, oligonucleotide, alkyl, alkylamine and abasic moiety.

33. An enzymatic nucleic acid molecule that specifically cleaves RNA derived from hepatitis B virus (HBV), wherein said enzymatic nucleic acid molecule comprises sequence defined as Seq. ID No. 6346.

34. A method of administering to a cell an enzymatic nucleic acid molecule of claim 33 comprising contacting said cell with the enzymatic nucleic acid molecule under conditions suitable for said administration.

35. The method of claim 34, further comprising the administration of one or more other therapeutic compounds.
36. The method of claim 35, wherein said other therapeutic compound is type I interferon.
37. The method of claim 35, wherein said other therapeutic compound is 3TC® (Lamivudine).
- 5 38. The method of claim 35, wherein said other therapeutic compound and the enzymatic nucleic acid molecule are administered simultaneously.
39. The method of claim 35, wherein said other therapeutic compound and enzymatic nucleic acid molecule are administered separately.
- 10 40. The method of claim 36, wherein said type I interferon is selected from the group consisting of interferon alpha, interferon beta, consensus interferon, polyethylene glycol interferon, polyethylene glycol interferon alpha 2a, polyethylene glycol interferon alpha 2b, and polyethylene glycol consensus interferon.
41. The method of claim 34 or claim 35, wherein said cell is a mammalian cell.
42. The method of claim 41, wherein said cell is a human cell.
- 15 43. The method of claim 41, wherein said administration is in the presence of a delivery reagent.
44. The method of claim 43, wherein said delivery reagent is a lipid.
45. The method of claim 44, wherein said lipid is a cationic lipid or a phospholipid.
46. The method of claim 43, wherein said delivery reagent is a liposome.
- 20 47. A nucleic acid molecule that specifically binds the hepatitis B virus (HBV) reverse transcriptase primer, wherein said nucleic acid molecule comprises the sequence (UUCA)<sub>n</sub>, wherein n is an integer from 1 to 10.

48. A nucleic acid molecule that specifically binds the hepatitis B virus (HBV) reverse transcriptase primer, wherein said nucleic acid molecule is a sequence comprising any of Seq. ID Nos: 11216-11262, 11264, 11266, 11268, 11270, 11272, 11274, 11276, 11278, 11280, 11282, 11284, 11286, 11288, 11290 and 11292.
- 5 49. A nucleic acid molecule that specifically binds to the Enhancer I sequence of HBV DNA.
50. A nucleic acid molecule of claim 49 wherein said nucleic acid molecule comprises any of SEQ ID Nos: 11327, 11330, 11332, 11334, 11335, 11338, 11340 and 11342.
51. A method of administering to a cell a nucleic acid molecule of any of claims 47-50 comprising contacting said cell with the nucleic acid decoy molecule under conditions  
10 suitable for said administration.
52. The method of claim 51, further comprising administering one or more other therapeutic compounds.
53. The method of claim 52, wherein said other therapeutic compound is type I interferon.
54. The method of claim 52, wherein said other therapeutic compound is 3TC® (Lamivudine).
- 15 55. The method of claim 52, wherein said other therapeutic compound and the nucleic acid molecule are administered simultaneously.
56. The method of claim 52, wherein said other therapeutic compound and the nucleic acid molecule are administered separately.
57. The method of claim 53, wherein said type I interferon is selected from the group consisting  
20 of interferon alpha, interferon beta, consensus interferon, polyethylene glycol interferon, polyethylene glycol interferon alpha 2a, polyethylene glycol interferon alpha 2b, and polyethylene glycol consensus interferon.
58. The nucleic acid molecule of any of claims 47-50, wherein said nucleic acid molecule comprises a nucleic acid backbone modification.



59. The nucleic acid molecule of any of claims 47-50, wherein said nucleic acid molecule comprises a nucleic acid sugar modification.
60. The nucleic acid molecule of any of claims 47-50, wherein said nucleic acid decoy molecule comprises a nucleic acid base modification.
- 5 61. The method of claim 51 or claim 52, wherein said cell is a mammalian cell.
62. The method of claim 61, wherein said cell is a human cell.
63. The method of claim 61, wherein said administration is in the presence of a delivery reagent.
64. The method of claim 63, wherein said delivery reagent is a lipid.
65. The method of claim 64, wherein said lipid is a cationic lipid or a phospholipid.
- 10 66. The method of claim 63 wherein said delivery reagent is a liposome.
67. The nucleic acid molecule of claim 47, wherein said nucleic acid molecule is a decoy nucleic acid molecule.
68. The nucleic acid molecule of claim 47, wherein said nucleic acid molecule is an aptamer nucleic acid molecule.
- 15 69. The nucleic acid molecule of claim 49, wherein said Enhancer I sequence comprises a Hepatocyte Nuclear Factor 3 and/or Hepatocyte Nuclear Factor 4 binding sequence.
70. A mouse implanted with HepG2.2.15 cells, wherein said mouse sustains the propagation of HEPG2.2.15 cells and HBV production.
- 20 71. The mouse of claim 70, wherein said mouse has been infected with HBV for at least one week.
72. The mouse of claim 70, wherein said mouse has been infected with HCV for at least four weeks.
73. The mouse of claim 70, wherein said mouse has been infected with HBV for at least eight weeks.

74. The mouse of claim 70, wherein said mouse is an immuno compromised mouse.
75. The mouse of claim 74, wherein said mouse is a nu/nu mouse.
76. The mouse of claim 74, wherein said mouse is a scid/scid mouse.
- 5 77. A method of producing a mouse according to claim 70, comprising injecting HepG2.2.15 cells into said mouse under conditions suitable for the propagation of the HepG2.2.15 cells in said mouse.
78. The method of claim 77, wherein said mouse is a nu/nu mouse.
79. The method of claim 77, wherein said mouse is a scid/scid mouse.
80. The method of claim 77, wherein said injection is subcutaneous injection.
- 10 81. The method of claim 77, wherein said HepG2.2.15 cells are suspended in Dulbecco's PBS solution including calcium and magnesium.
82. A method of screening a therapeutic compound for activity against HBV comprising administering said therapeutic compound to a mouse of claim 70 and monitoring said mouse for the effects of said therapeutic compound on levels of HBV DNA.
- 15 83. The method of claim 70, wherein said therapeutic compound is a nucleic acid molecule, administered alone or in combination with another therapeutic compound or treatment.
84. The method of claim 83, wherein said nucleic acid molecule is an enzymatic nucleic acid molecule.
- 20 85. The method of claim 83, wherein said nucleic acid molecule is an antisense nucleic acid molecule.
86. The method of claim 83, wherein said other treatment is antiviral therapy.
87. The method of claim 86, wherein said antiviral therapy is treatment with 3TC® (Lamivudine).
88. The method of claim 86, wherein said antiviral therapy is treatment with interferon.
- 25 89. The method of claim 88, wherein said interferon is selected from the group consisting of consensus interferon, type I interferon, interferon alpha, interferon beta, consensus

interferon, polyethylene glycol interferon, polyethylene glycol interferon alpha 2a, polyethylene glycol interferon alpha 2b and polyethylene glycol consensus interferon.

- 5 90. An immunocompromised non-human mammal implanted with HepG2.2.15 cells, wherein said non-human mammal is susceptible to HBV infection and capable of sustaining HBV DNA expression.
91. The mammal of claim 90, wherein said non-human mammal has been infected with HBV for at least one week.
92. The mammal of claim 90, wherein said non-human mammal has been infected with HCV for at least four weeks.
- 10 93. The mammal of claim 90, wherein said non-human mammal has been infected with HBV for at least eight weeks.
94. The mammal of claim 90, wherein said non-human mammal is a nu/nu mammal.
95. The mammal of claim 90, wherein said non-human mammal is a scid/scid mammal.
- 15 96. A method of producing a non-human mammal according to claim 90, comprising injecting HepG2.2.15 cells into said non-human mammal under conditions suitable for the propagation of the HepG2.2.15 cells in said non-human.
97. The method of claim 96, wherein said non-human mammal is a nu/nu mammal.
98. The method of claim 96, wherein said non-human mammal is a scid mammal.
99. The method of claim 96, wherein said injection is subcutaneous injection.
- 20 100. The method of claim 96, wherein said HepG2.2.15 cells are suspended in Delbecco's PBS solution including calcium and magnesium.
101. A method of screening a therapeutic compound for activity against HBV, comprising administering said therapeutic compound to a non-human mammal of claim 90 and monitoring said mammal for the effects of said therapeutic compound on levels of HBV DNA.
- 25 102. The method of claim 101, wherein said therapeutic compound is a nucleic acid molecule administered alone or in combination with another therapeutic compound or treatment.

103. The method of claim 102, wherein said nucleic acid molecule is an enzymatic nucleic acid molecule.

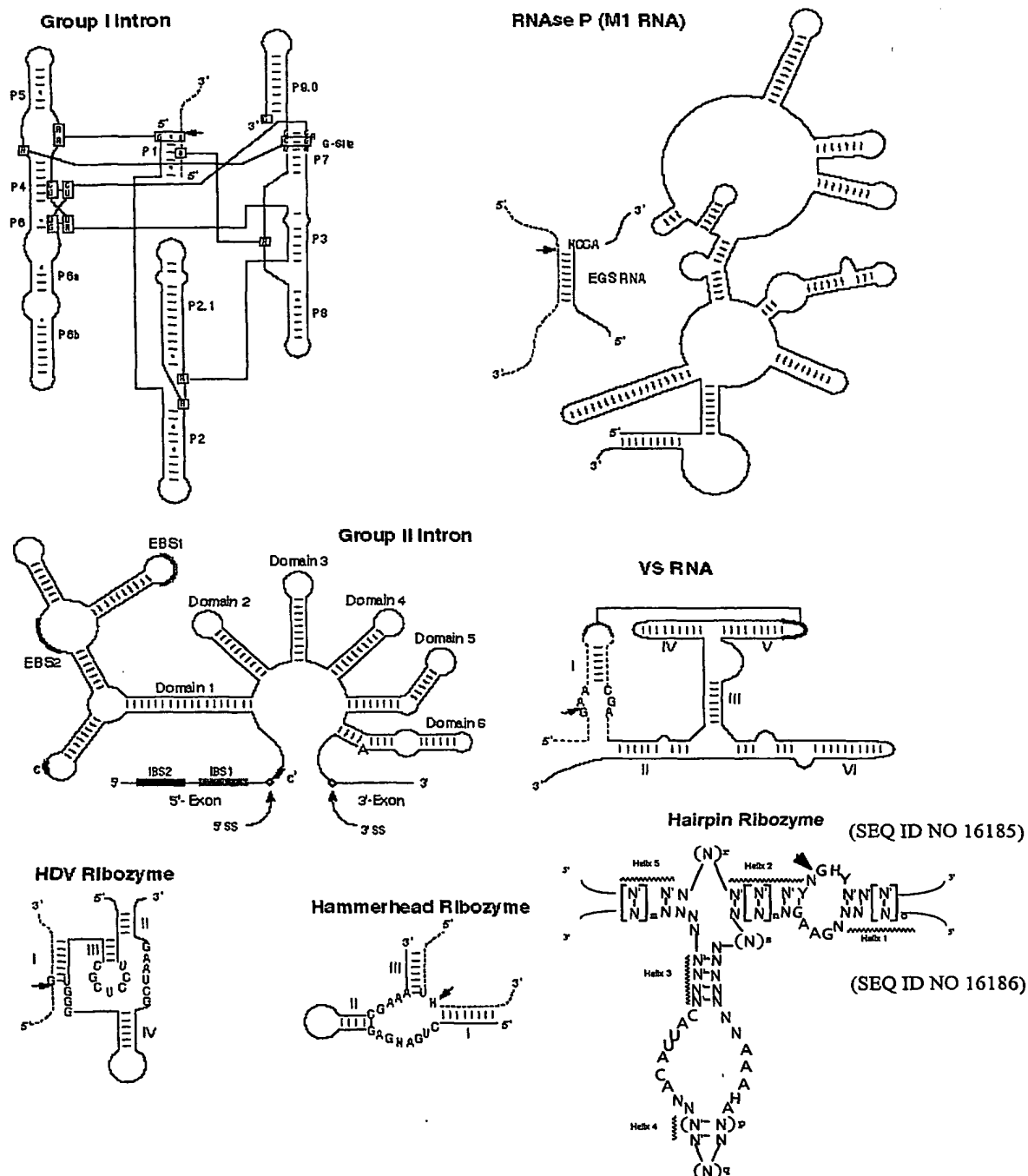
104. The method of claim 102, wherein said nucleic acid molecule is an antisense nucleic acid molecule.

5 105. The method of claim 102, wherein said other treatment is antiviral therapy.

106. The method of claim 105, wherein said antiviral therapy is treatment with 3TC® (Lamivudine).

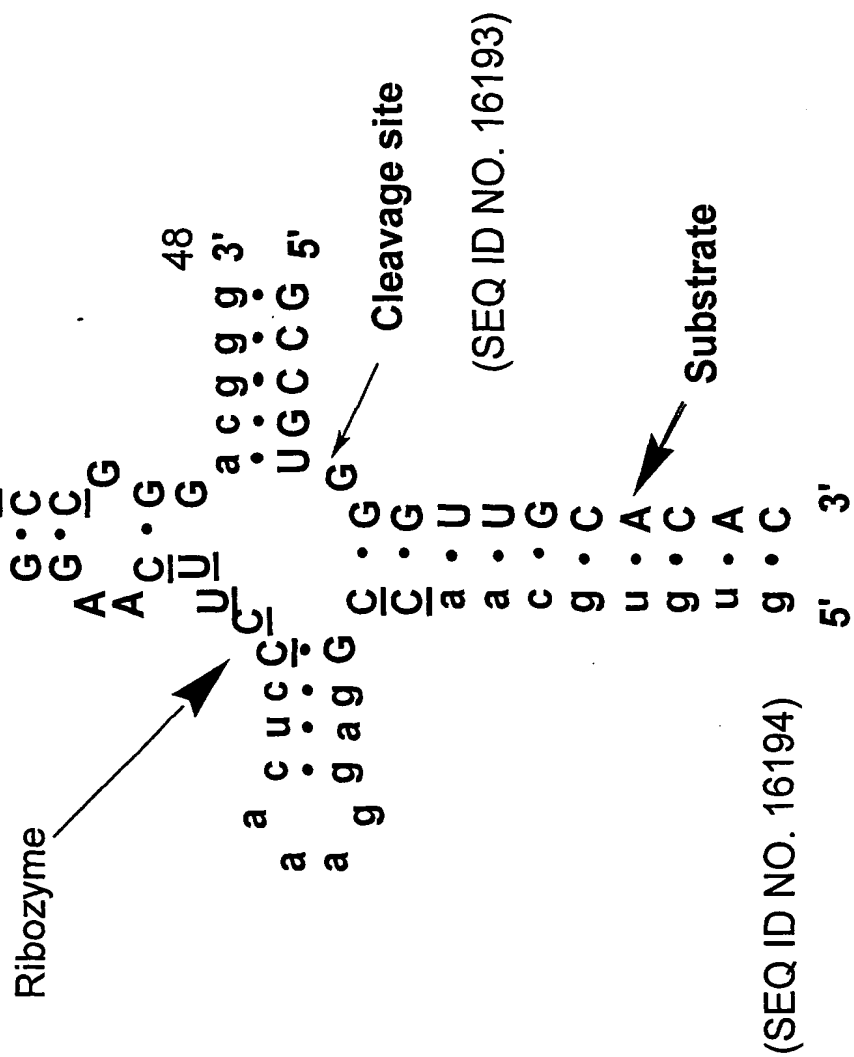
107. The method of claim 105, wherein said antiviral therapy is treatment with interferon.

10 108. The method of claim 107, wherein said interferon is selected from the group consisting of consensus interferon, type I interferon, interferon alpha, interferon beta, consensus interferon, polyethylene glycol interferon, polyethylene glycol interferon alpha 2a, polyethylene glycol interferon alpha 2b, and polyethylene glycol consensus interferon.

**Figure 1: Ribozyme Motifs**

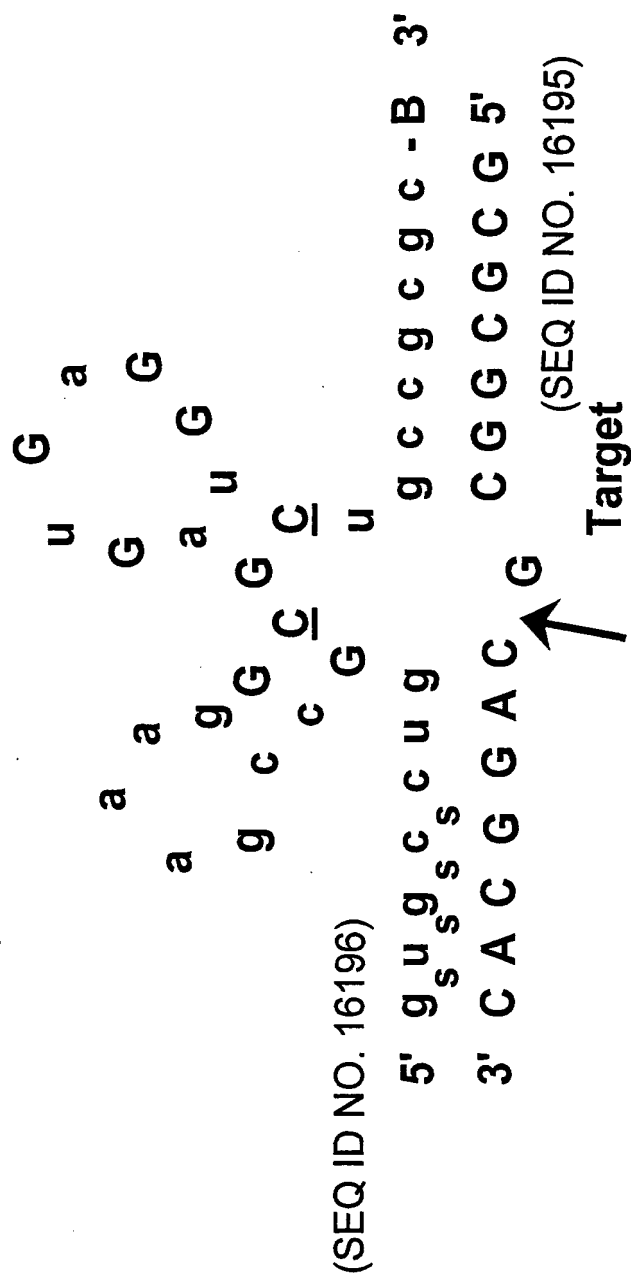
[illegible]

**U,C = 2'-NH<sub>2</sub>-U,C**  
**Lower case = 2'-O-Me**  
**Uppercase = Ribo**



**Figure 4: Stabilized Zinzyme Ribozyme Motif**

**Zinzyme A-motif RZ**



**Legend**

Uppercase indicates natural ribo residues

C indicates 2' - d-NH<sub>2</sub>-C

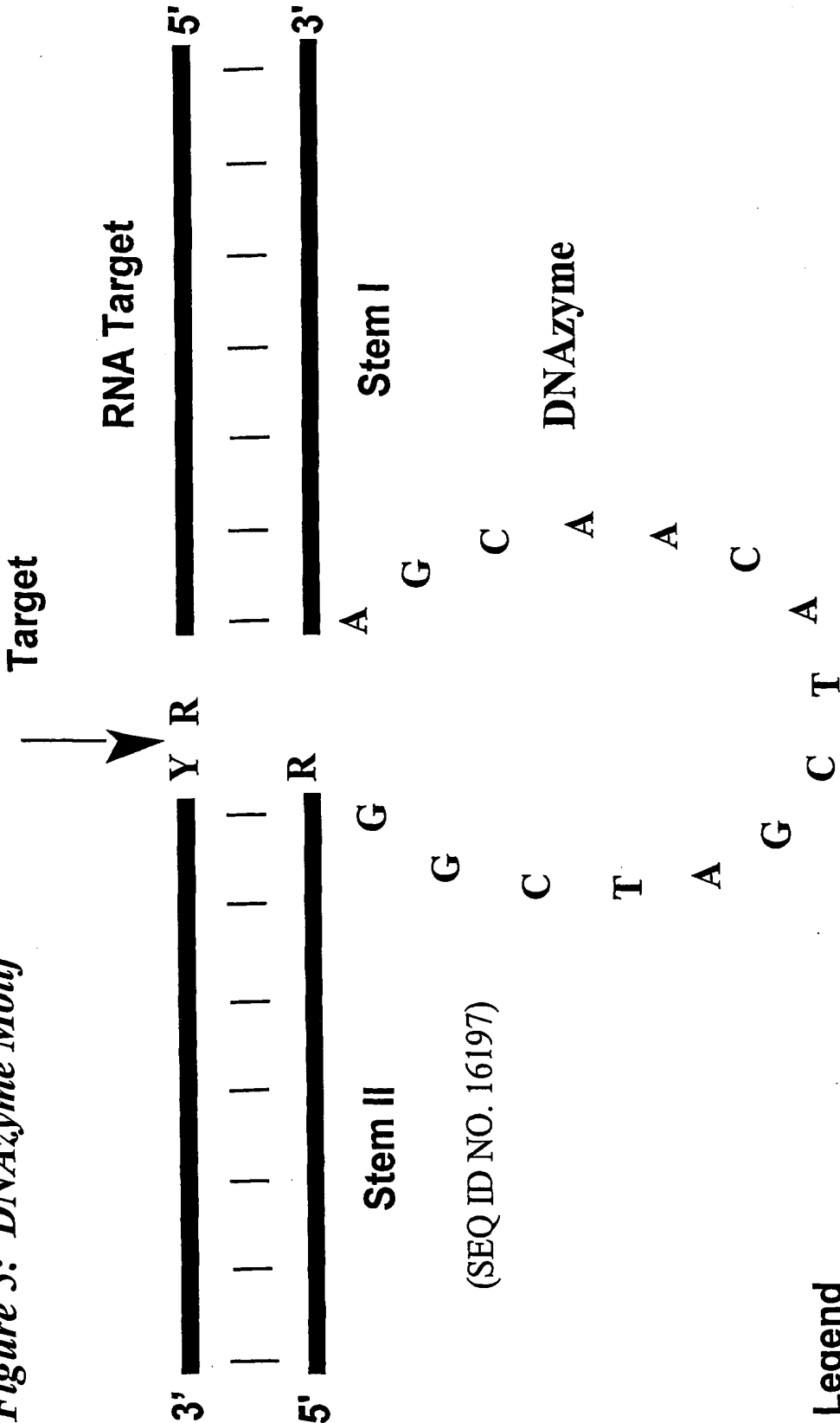
Lowercase: 2'-O-Me

Subscript <sub>s</sub> indicates phosphothioate linkage

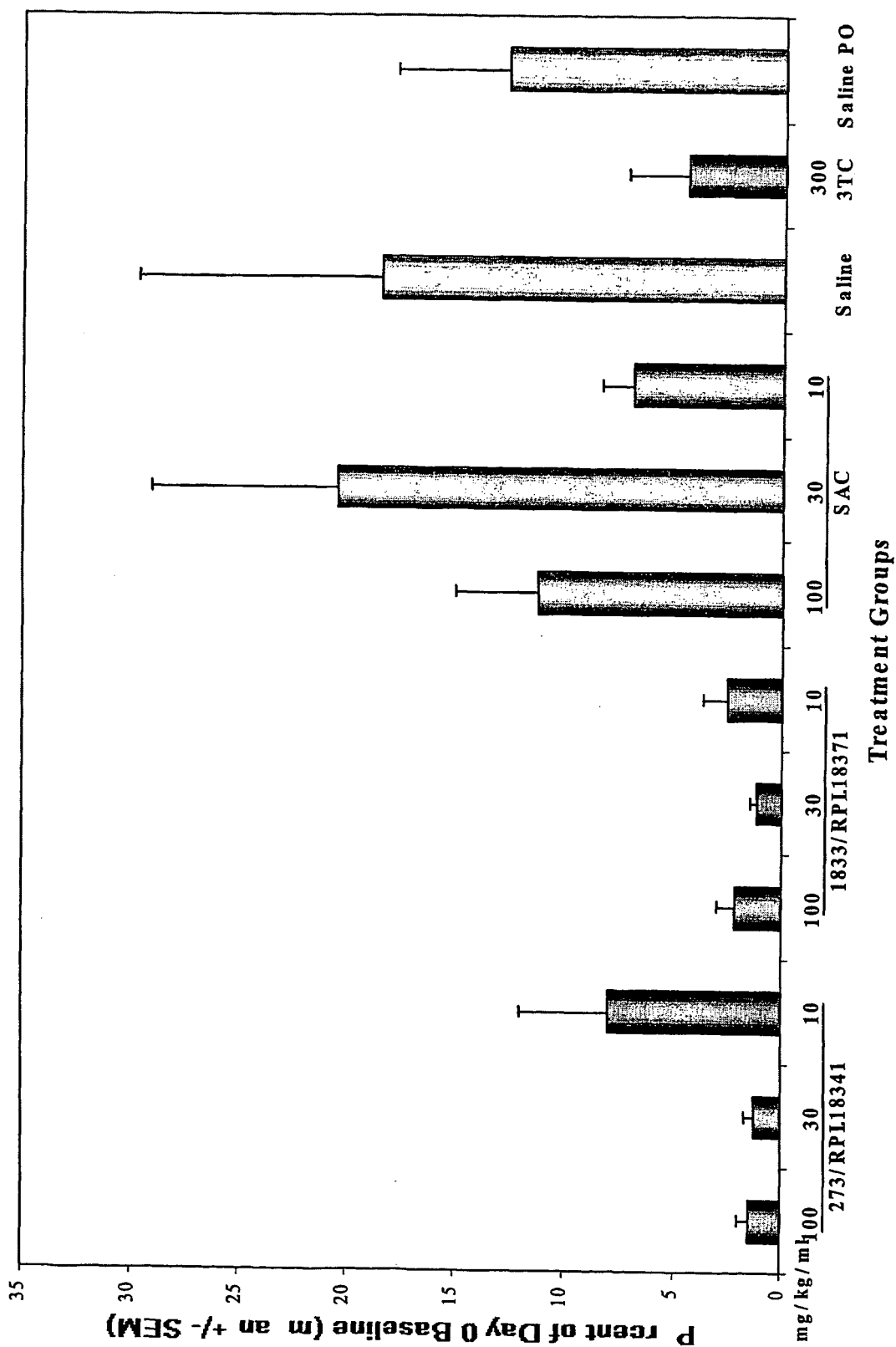
B: 3'- 3' abasic moiety



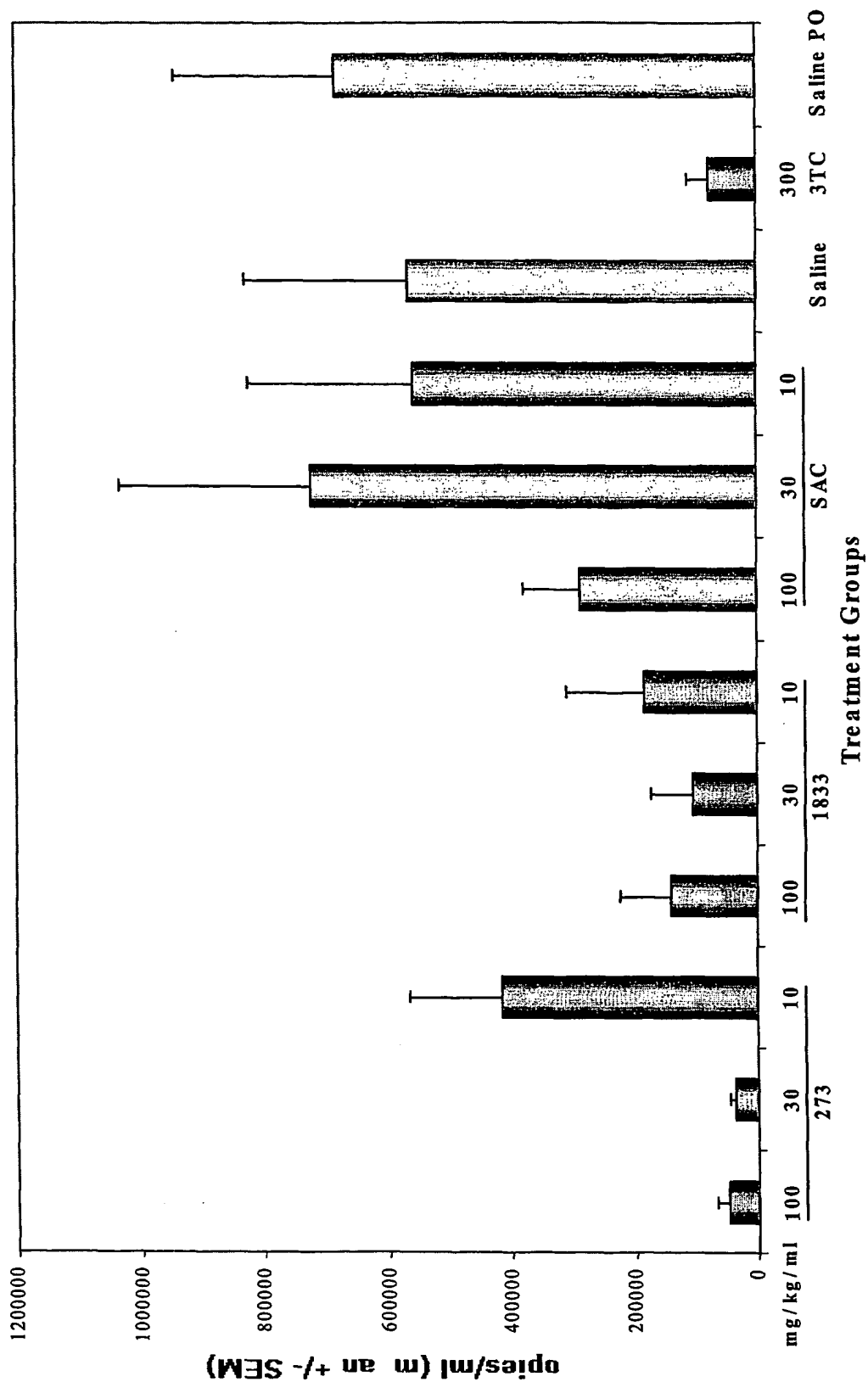
Figure 5: DNAzyme Motif



**Figure 6: Change in Serum HBV DNA Levels Following 14 Days of Ribozyme Treatment of HBV Transgenic Mice**



**Figure 7: Mean Serum HBV DNA Levels Following 14 Days of Ribozyme Treatment of HBV Transgenic Mice**



**Figure 8: Change in Serum HBV DNA Levels (Log) Following 14 Days of Ribozyme Treatment of HBV Transgenic Mice**

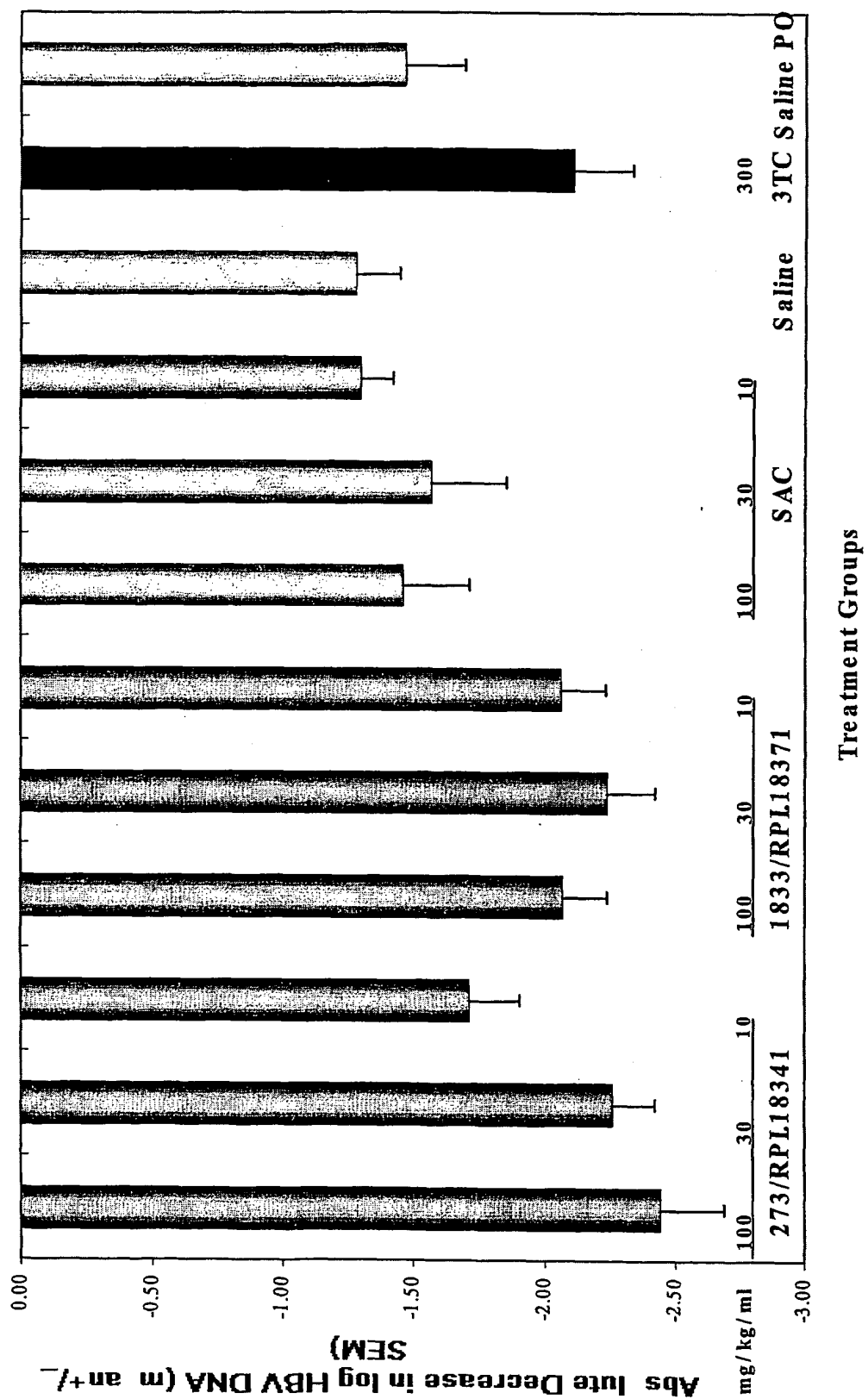
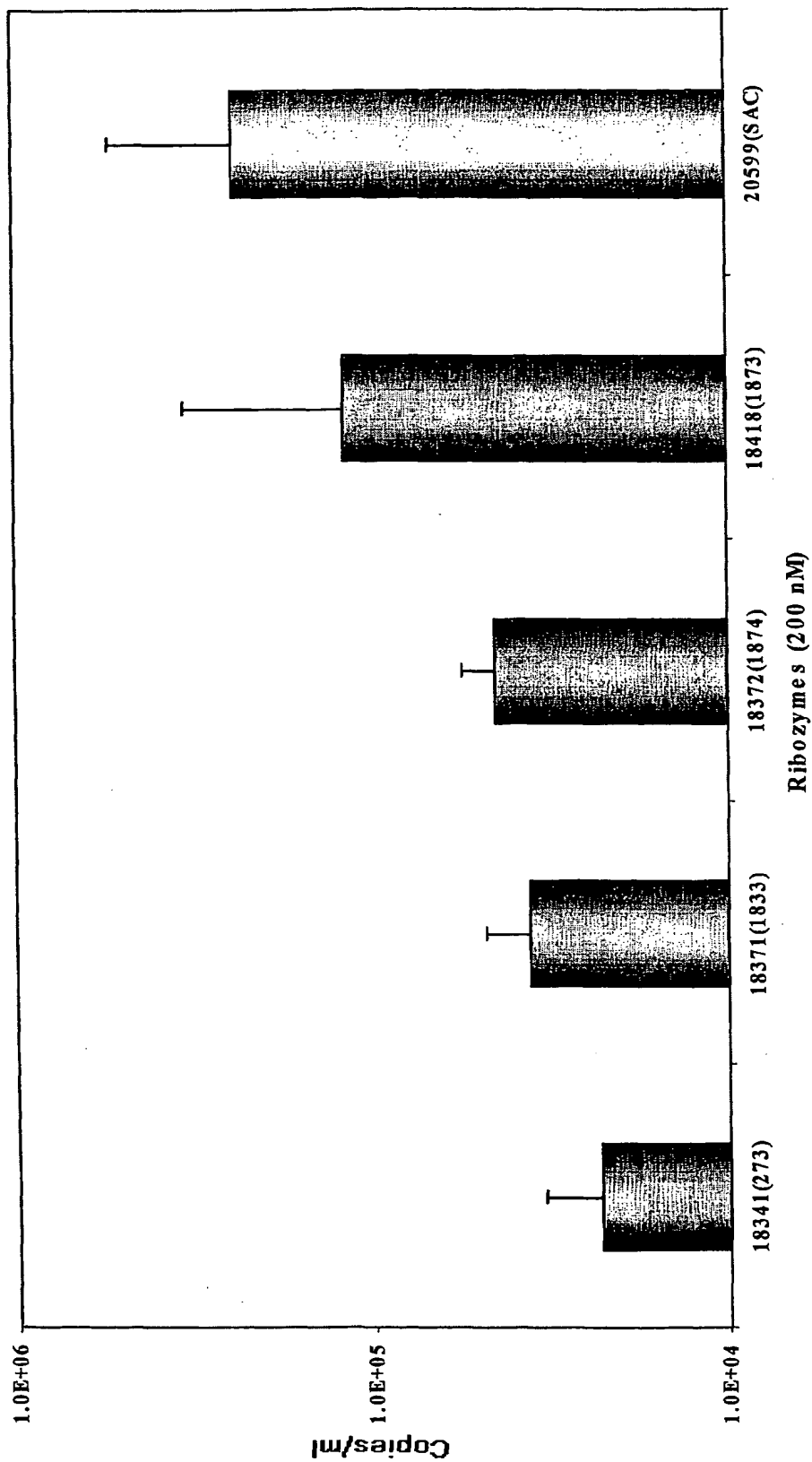


Figure 9: anti-HBV Ribozymes in HepG2.2.15 Cells: HBV DNA



**Figure 10: Arm, Loop, and Stem Variants of Anti-HBV Ribozyme Targeting Site 273: HBsAg Levels in Hep G2 Cells**

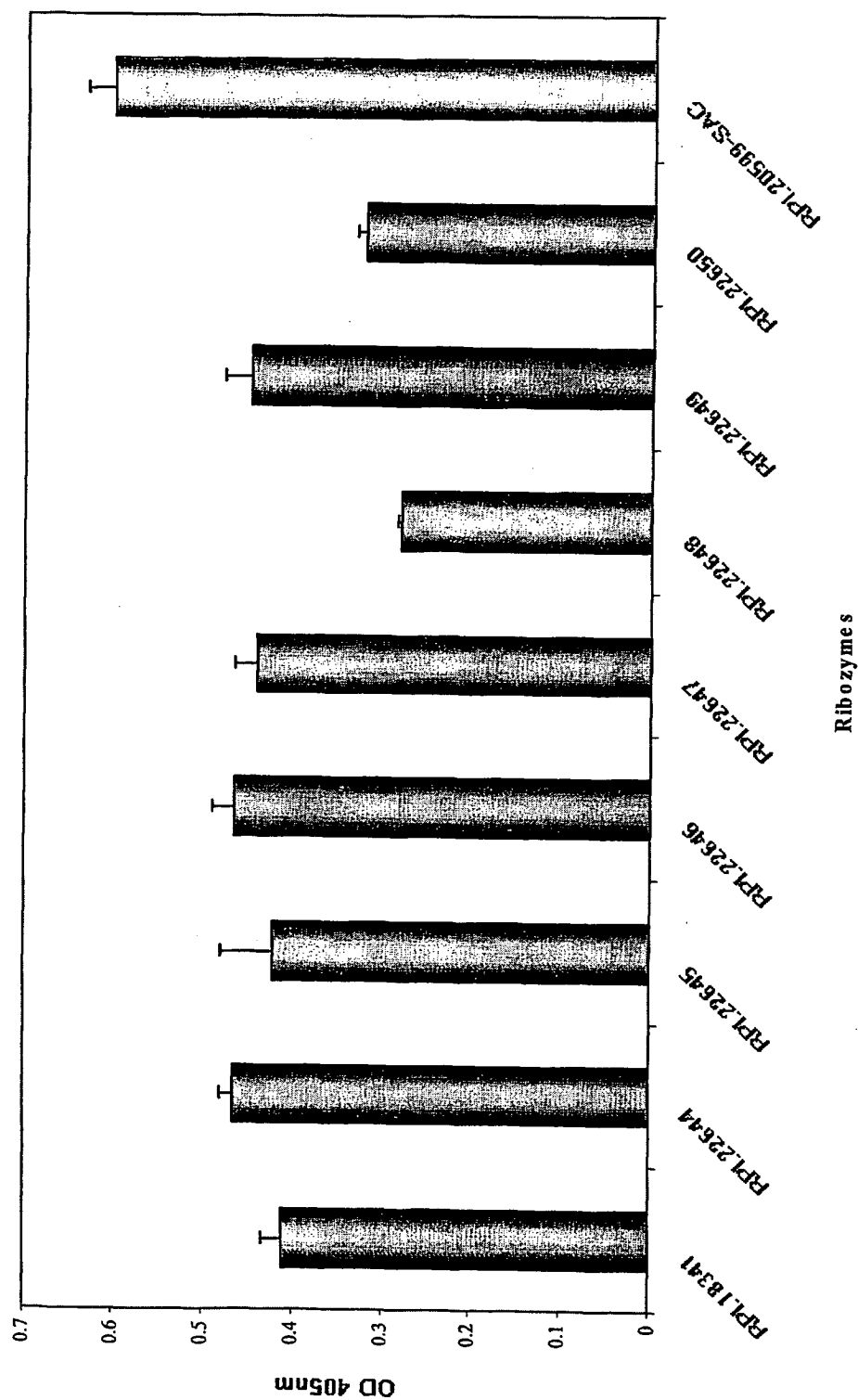


Fig II: Hep G2 Cells Treated with RPI.1834I  
and Interferon: HBsAg ELISA

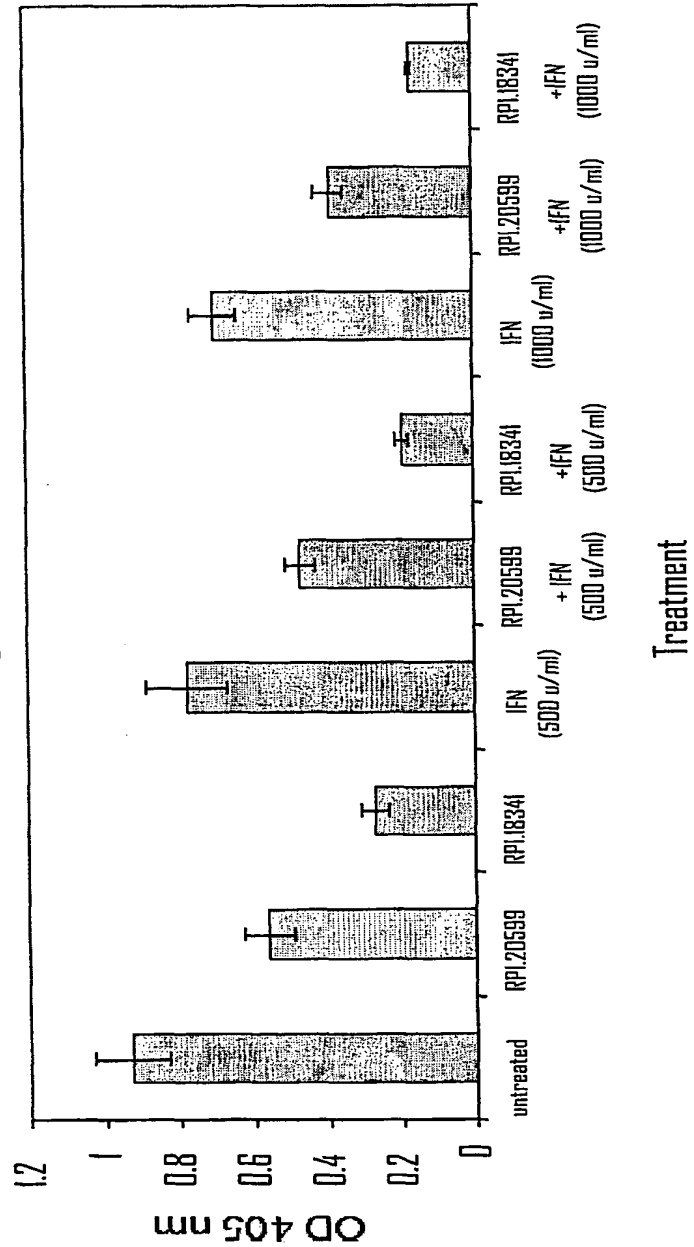
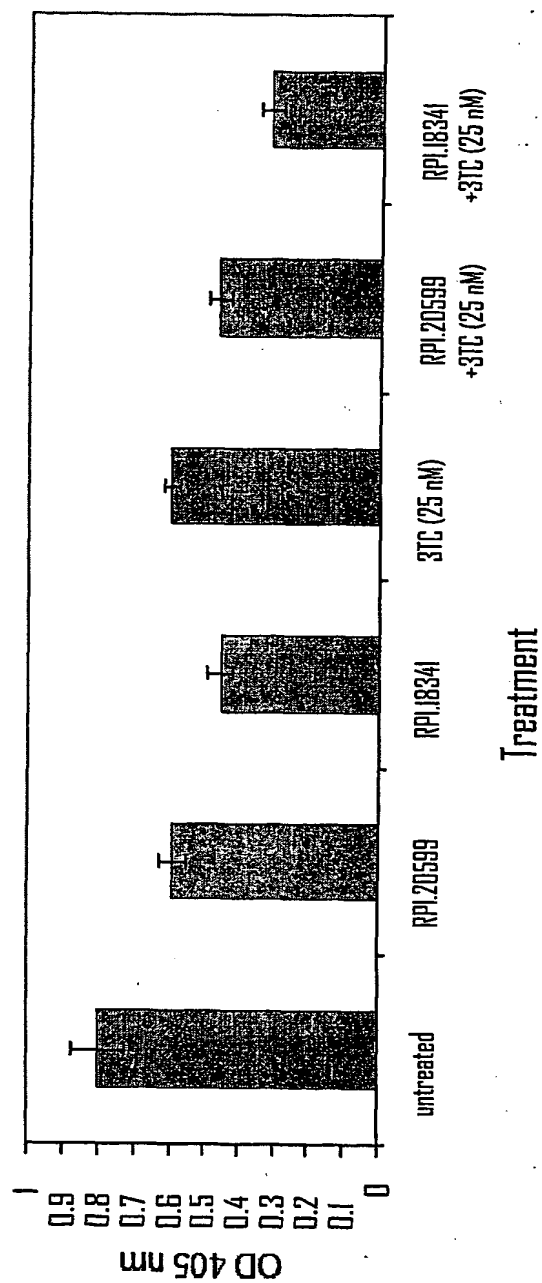


Fig 12: Hep G2 Cells Treated with 100 nM RPI.18341 and Lamivudine (3TC): HBsAg ELISA





**Figure 13: HBV Reverse Transcription**

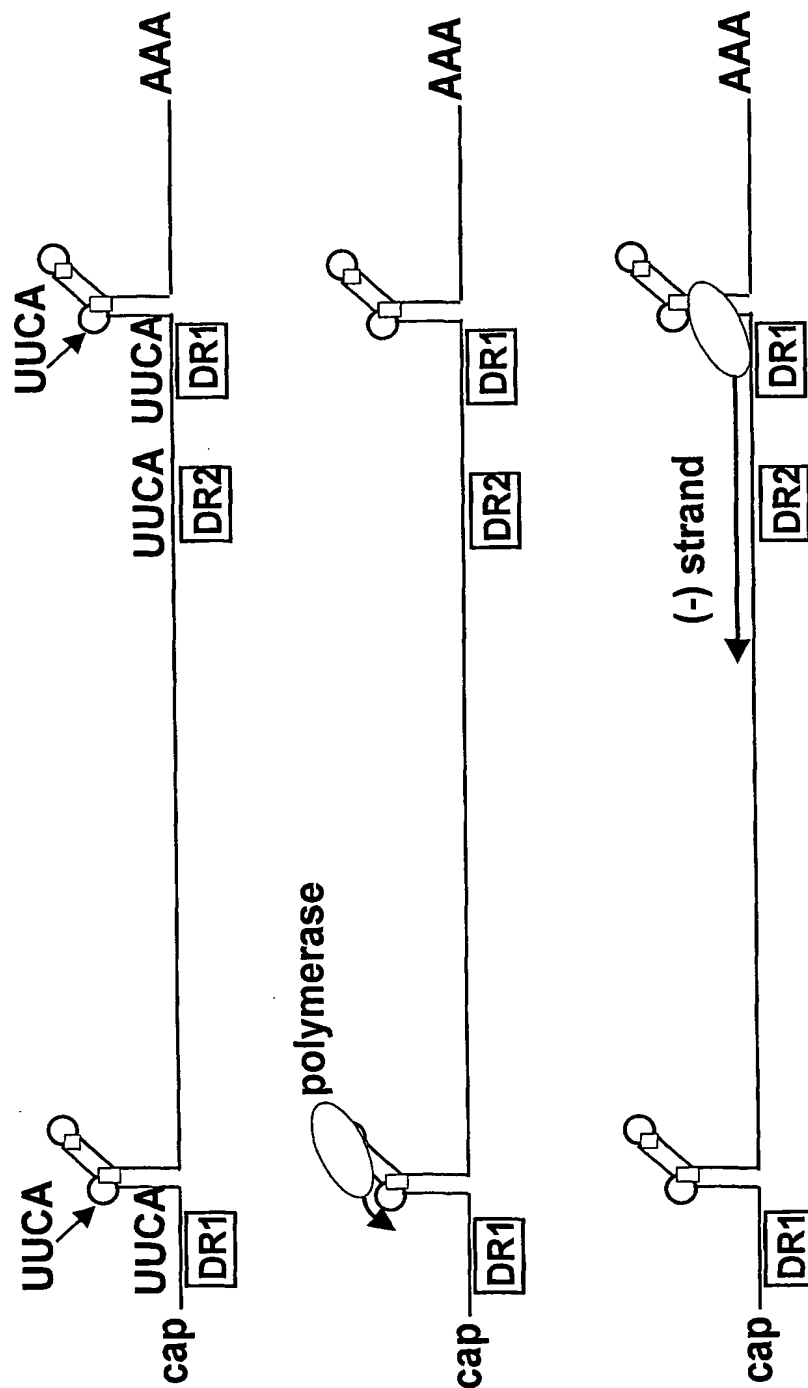
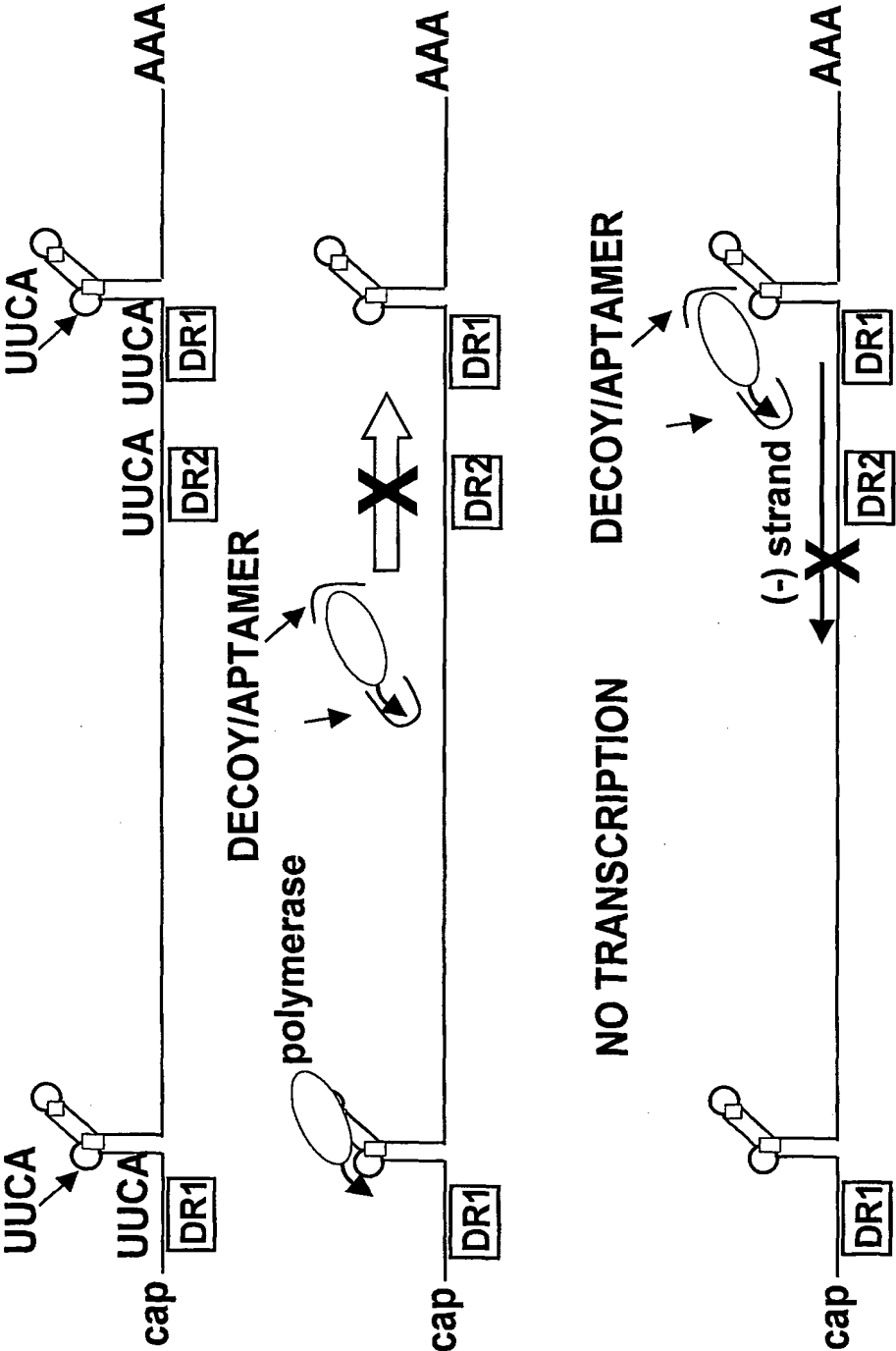
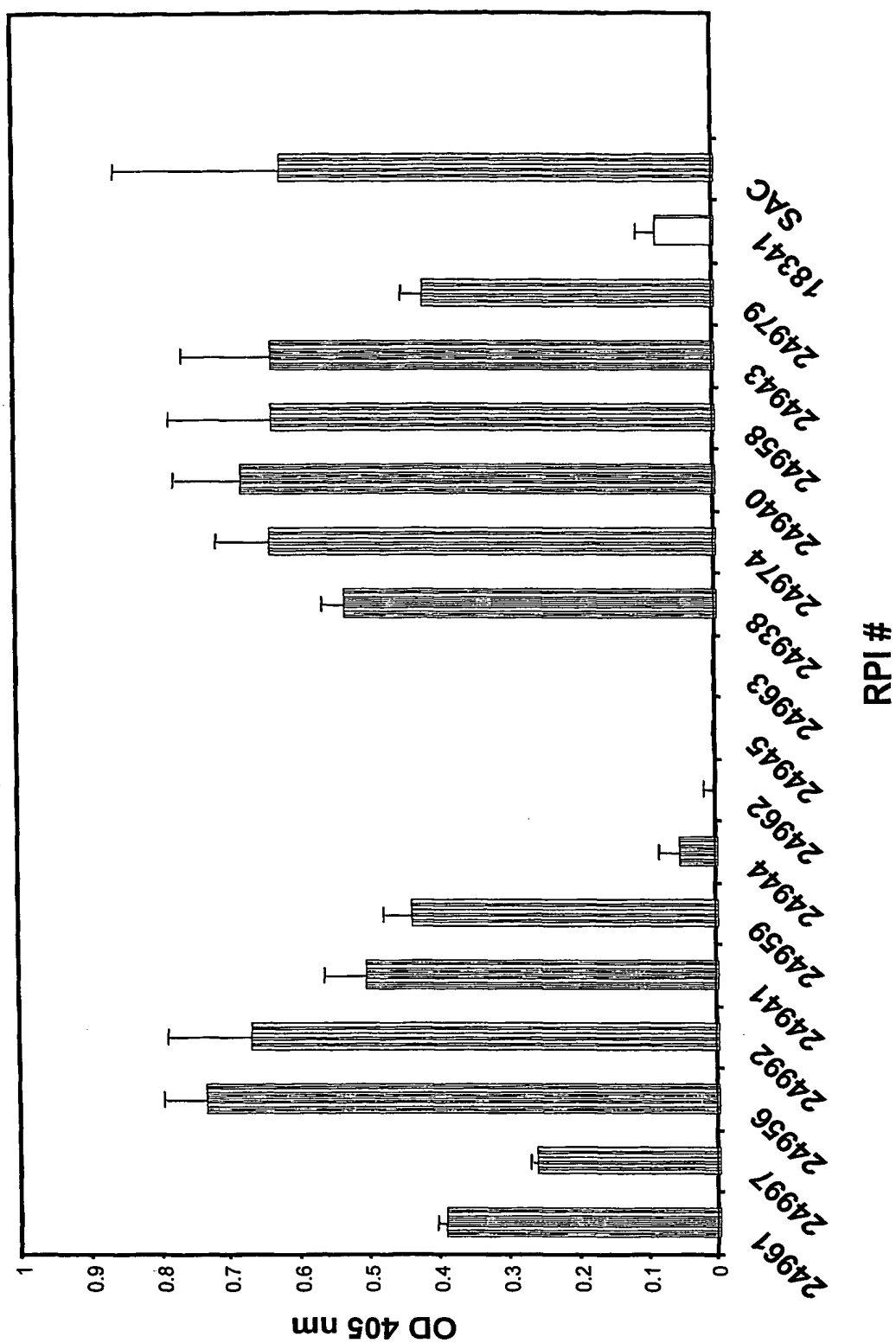


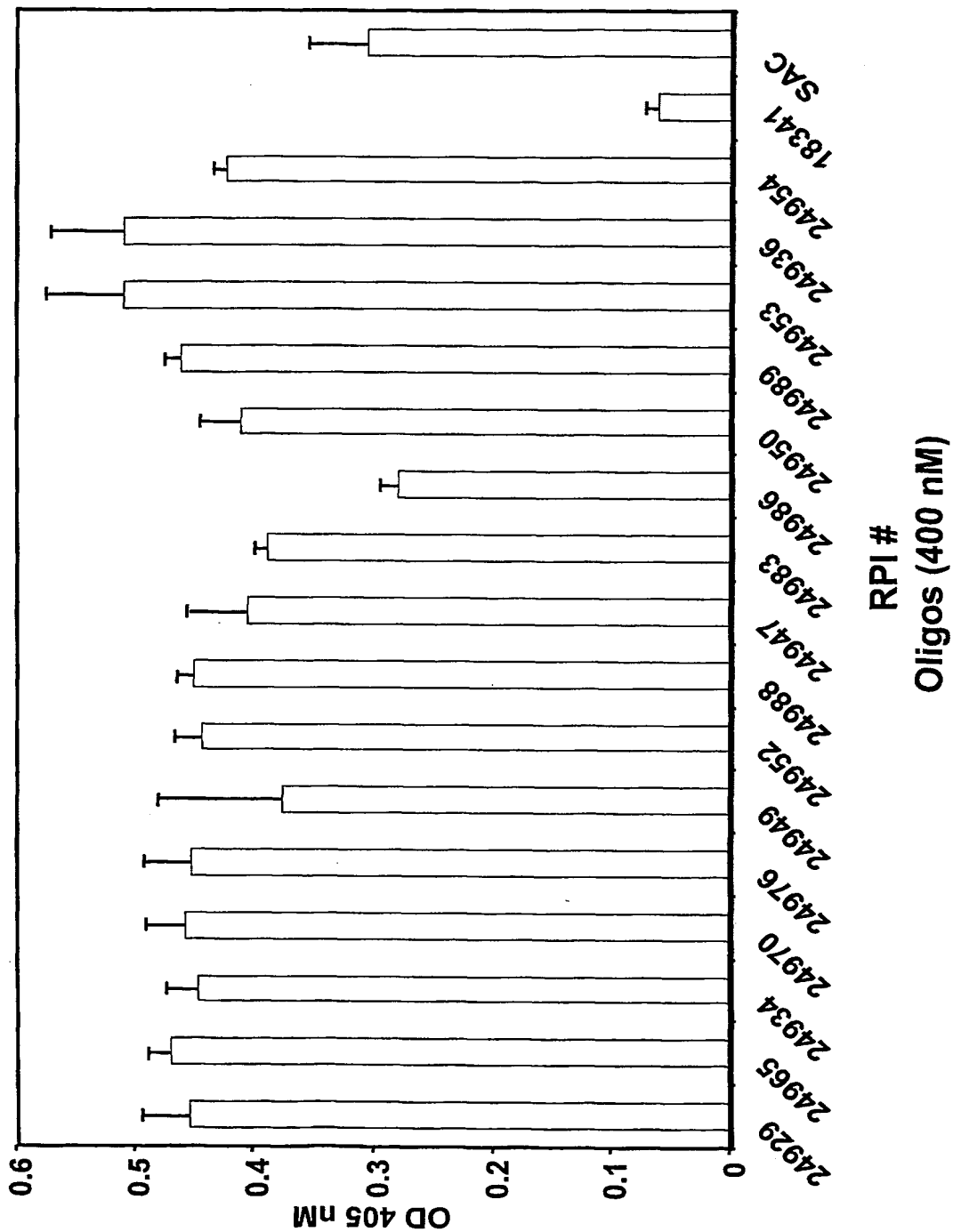
Figure 14: HBV RT Inhibition



**Figure 15: Screening of HBV RT Primer Competitive Inhibitors (2'-O-Allyl): HBsAg**



**Figure 16: Screening of HBV RT Primer Competitive Inhibitors (2'-O-Methyl): HBsAg**



**Figure 17: Dose Response with 2'-O-Methyl  
UUCAUUCA Oligo: HBsAg**

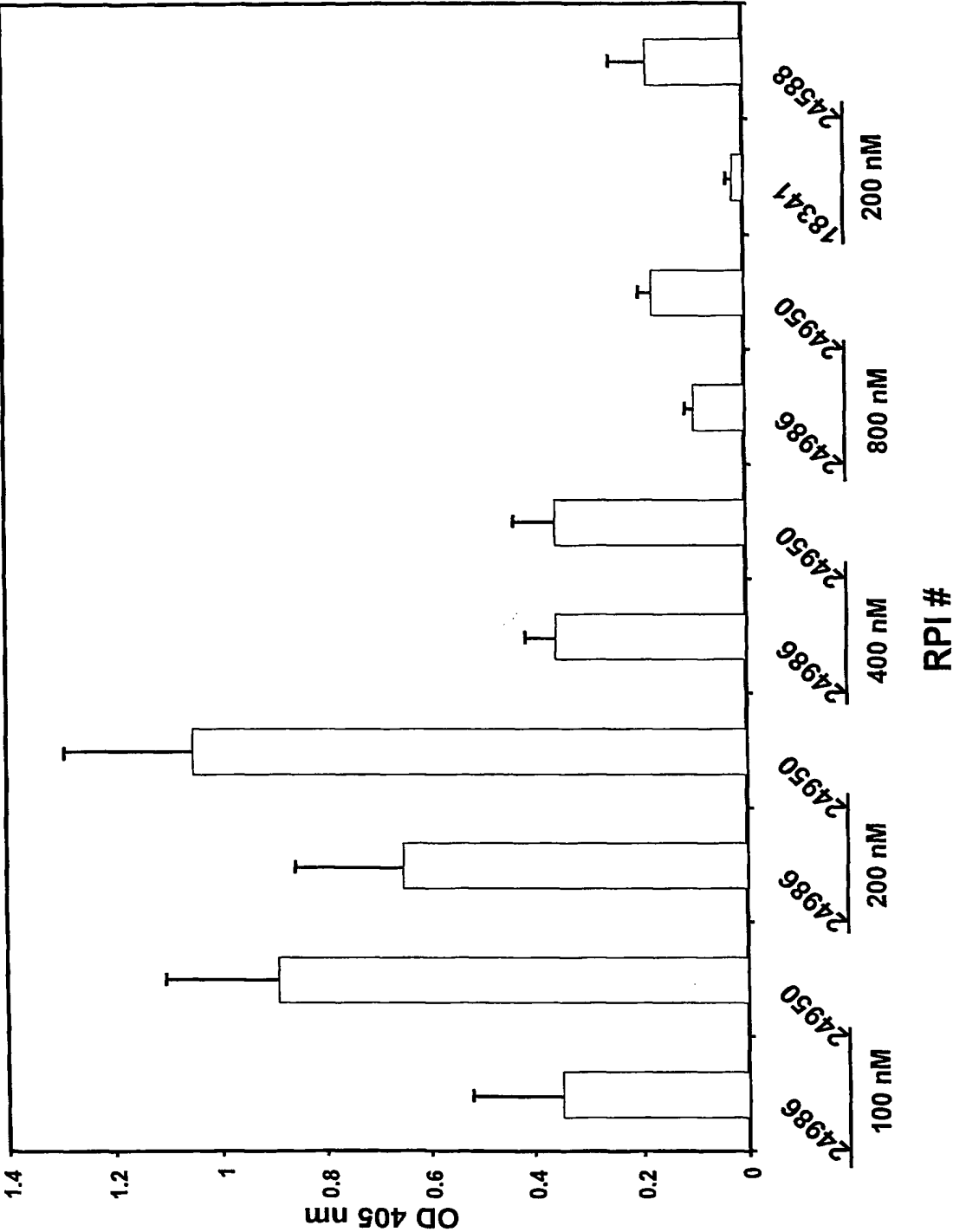


Figure 18: HBV Enhancer I Oligo Screen 200 nM:HBsAg

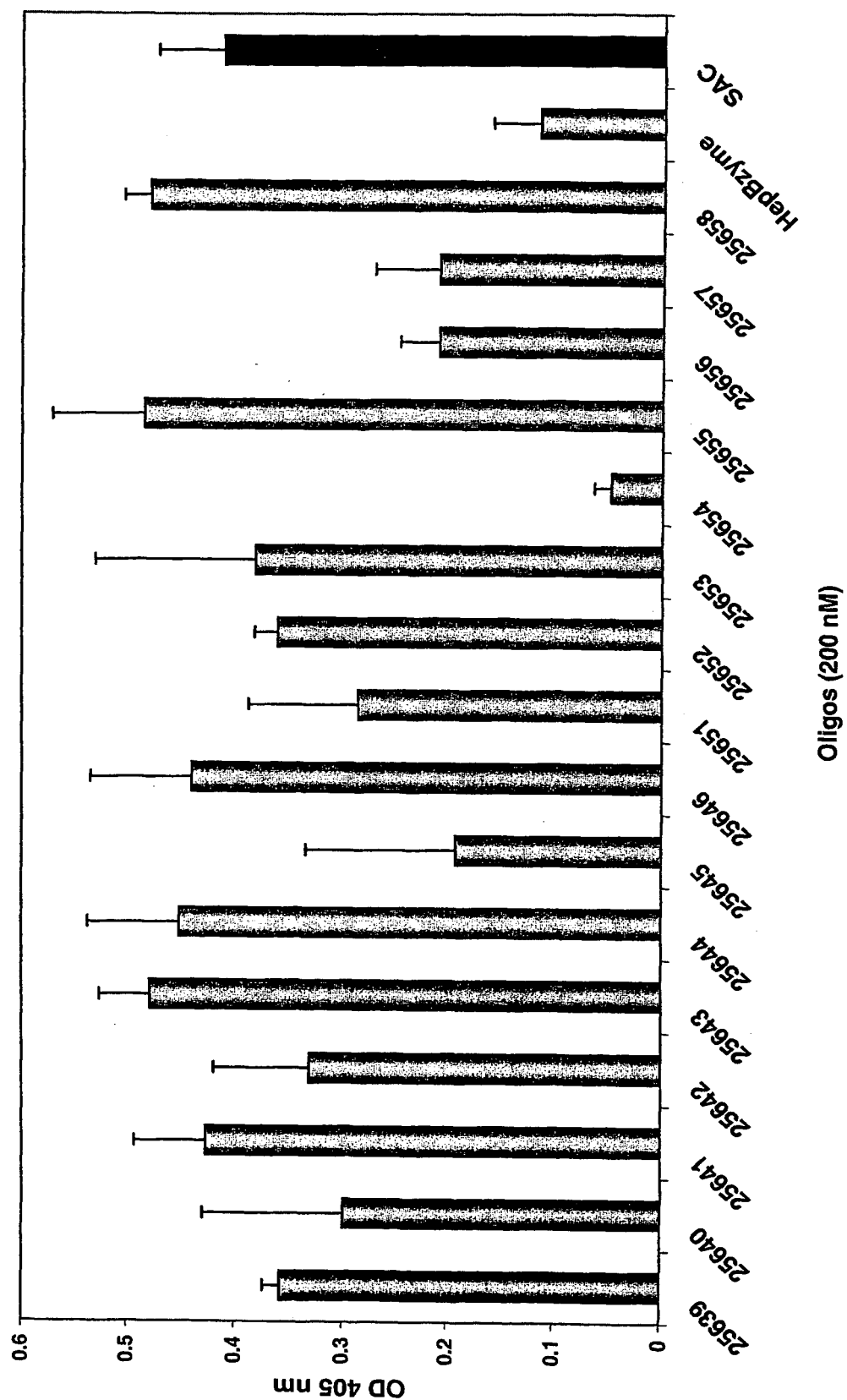


Figure 19: HBV Enhancer I Oligo Screen 400 nM: HBsAg

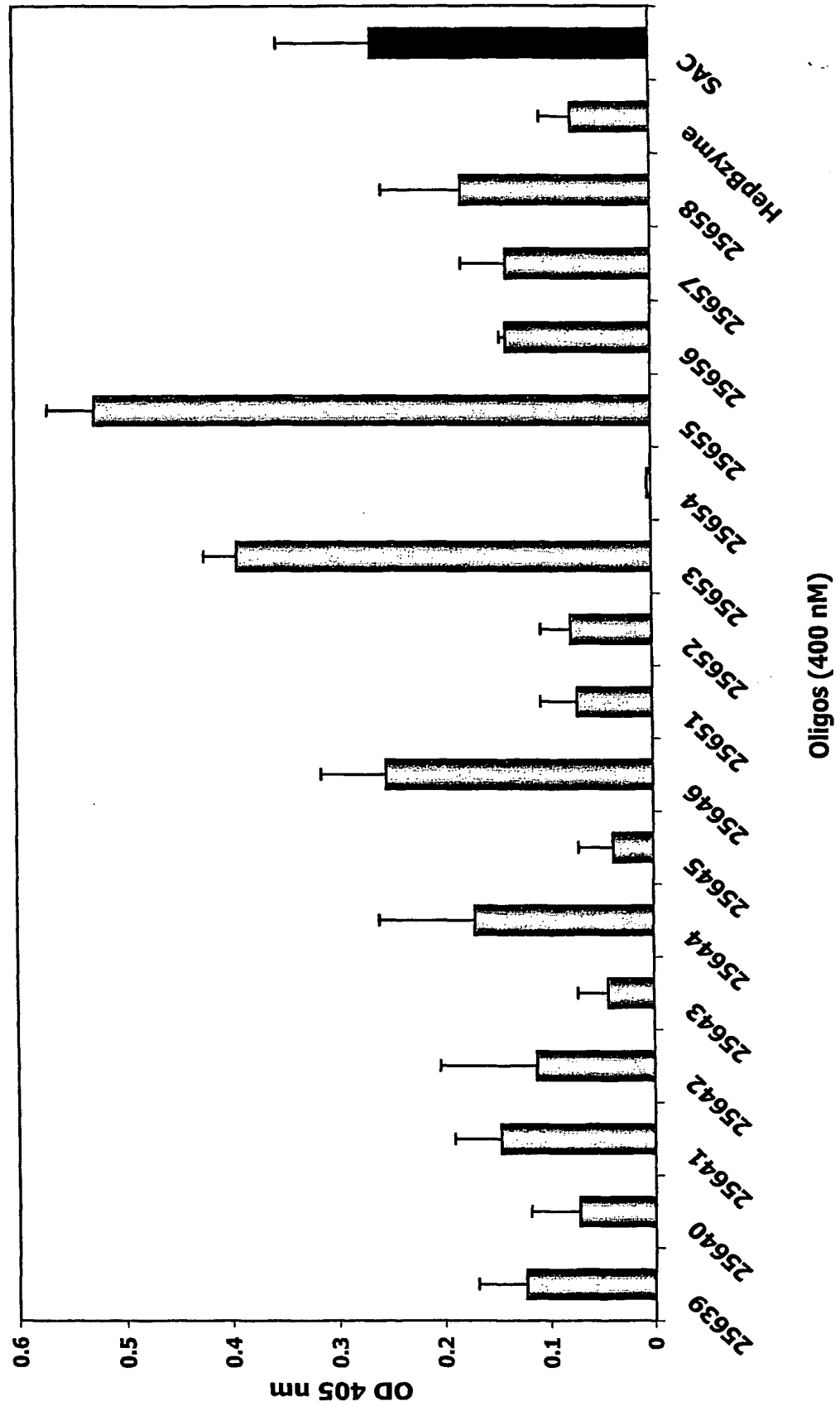
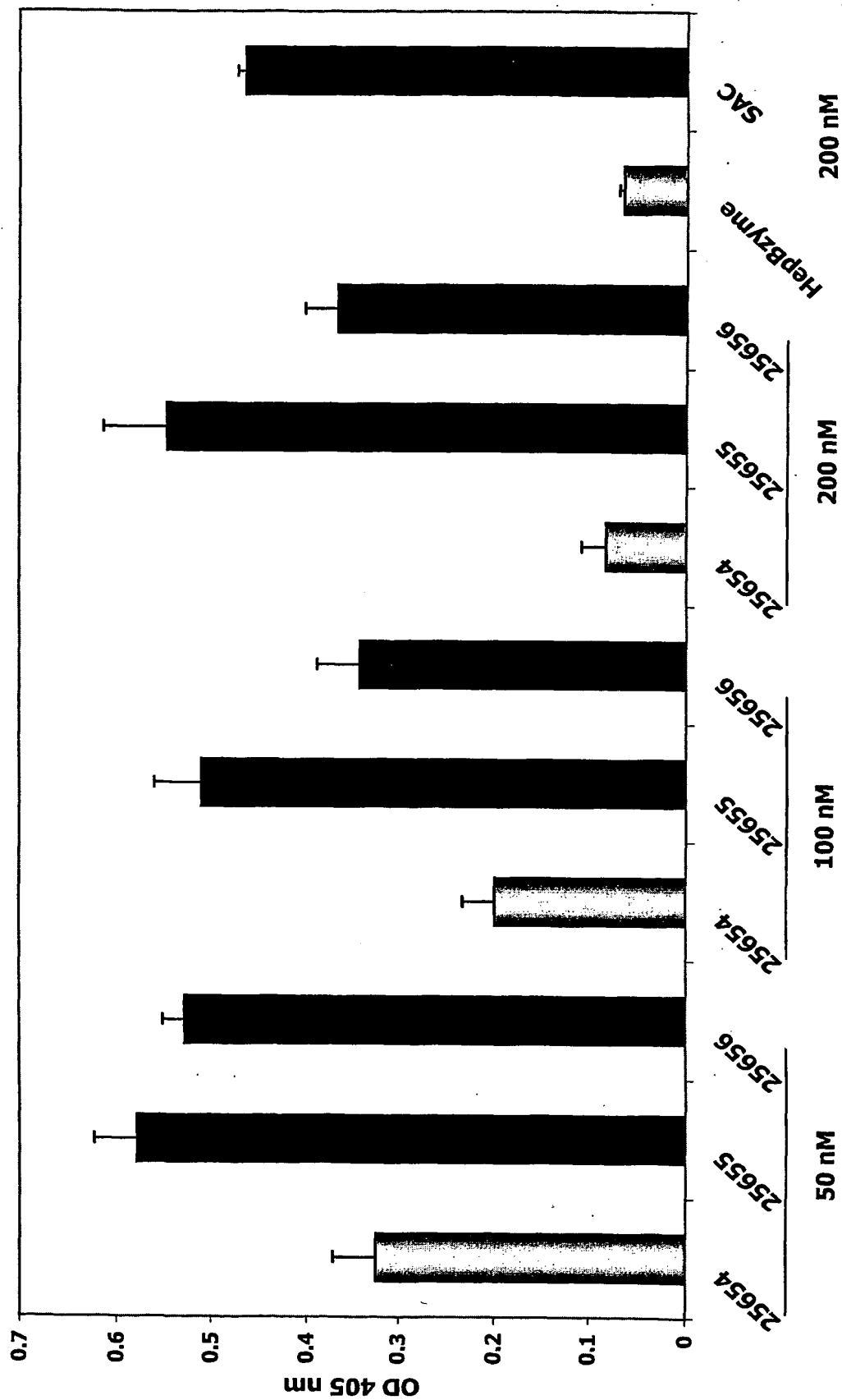
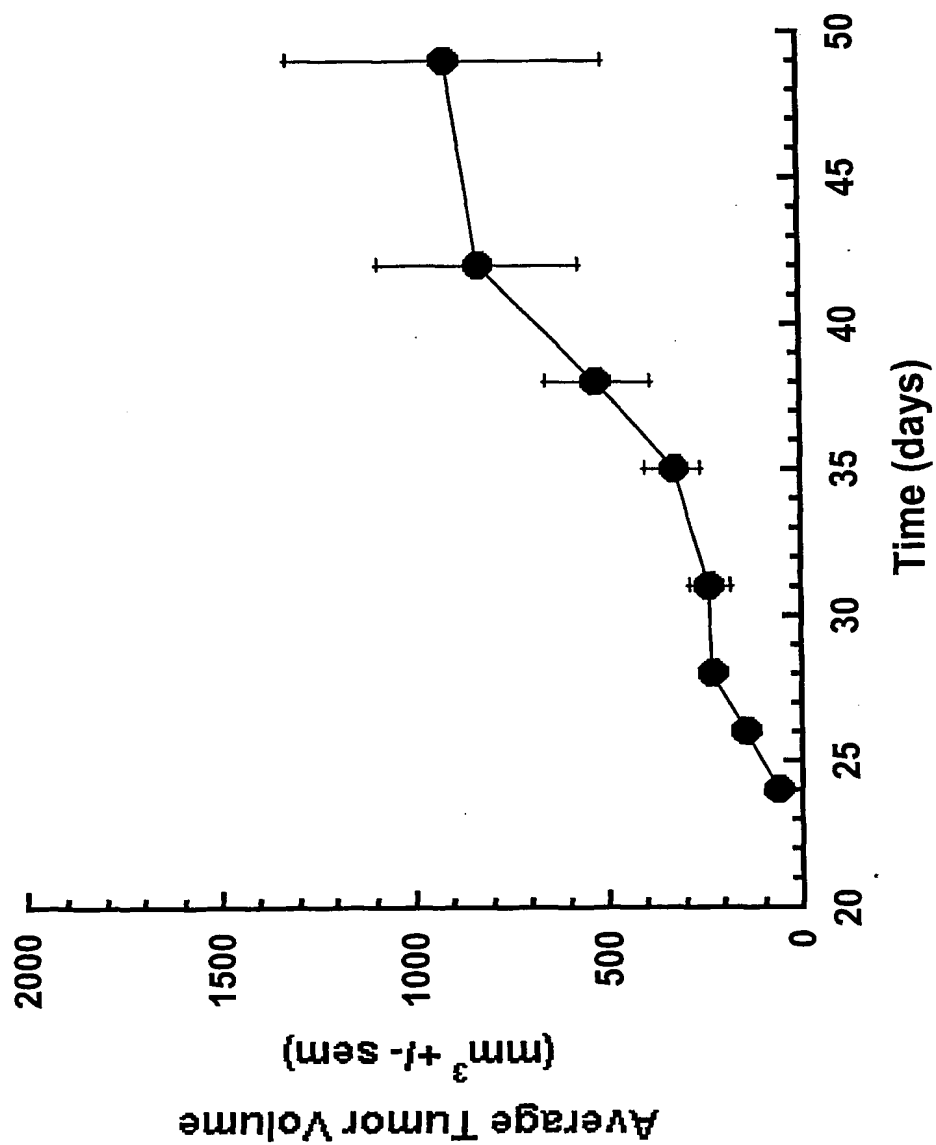


Figure 20: HBV Enhancer 1 Oligos Dose Response HBsAg

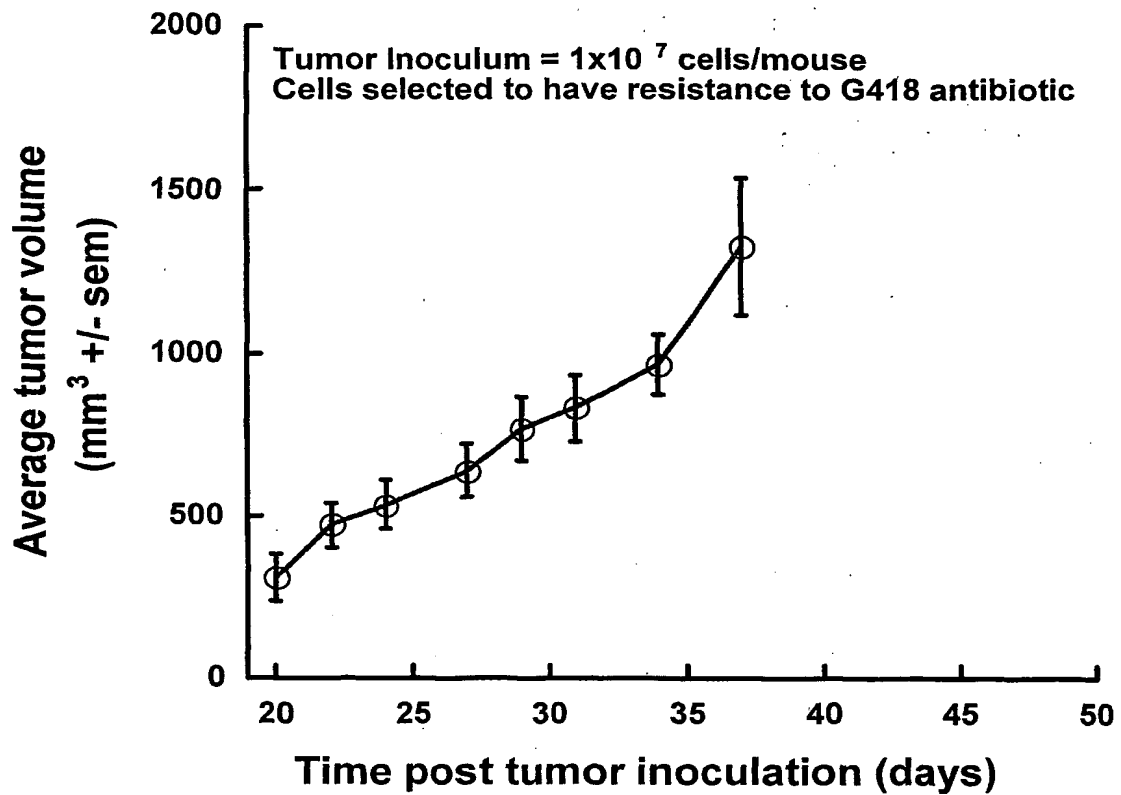




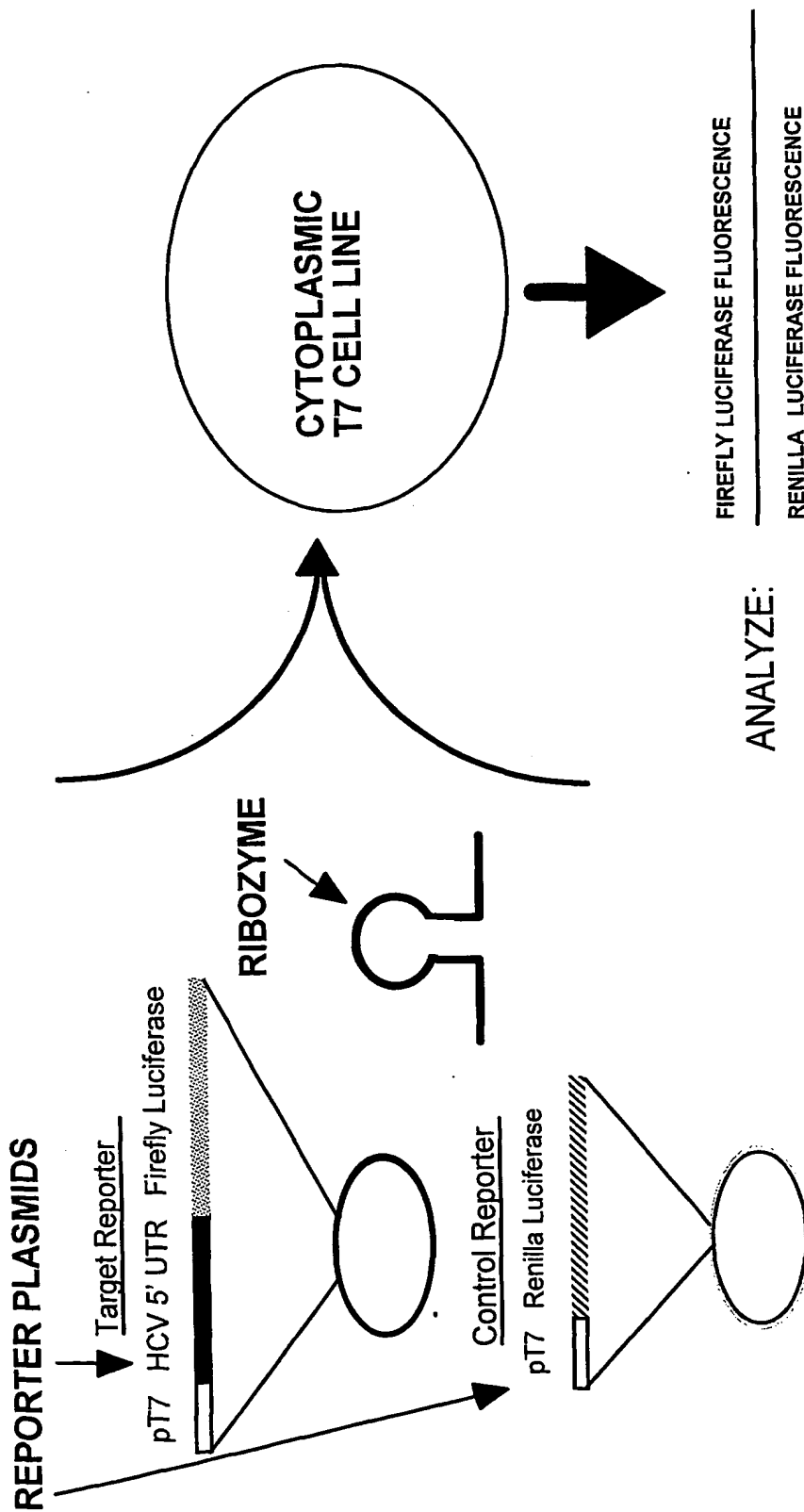
**Figure 21: Growth of HepG2.2.15 tumors in  
Athymic Nu/Nu female mice**



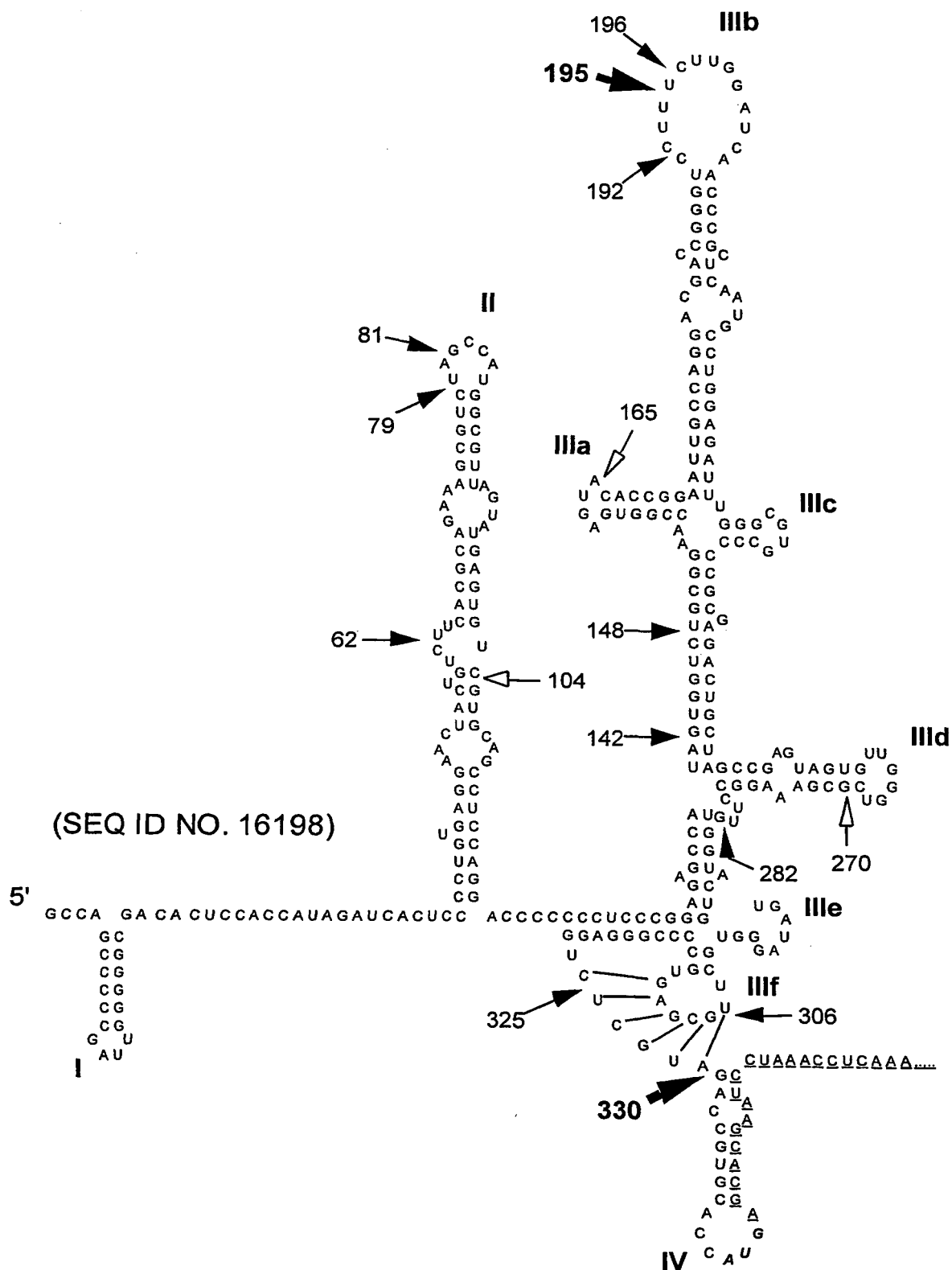
**Figure 22: Growth of HepG2.2.15 tumors in  
Athymic Nu/Nu female mice**



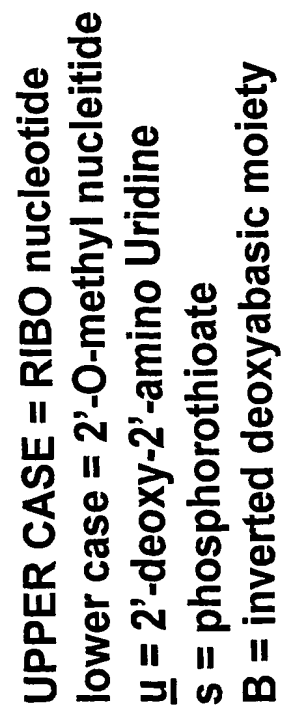
**FIGURE 23** *Dual Reporter System for Cytoplasmic HCV Target*



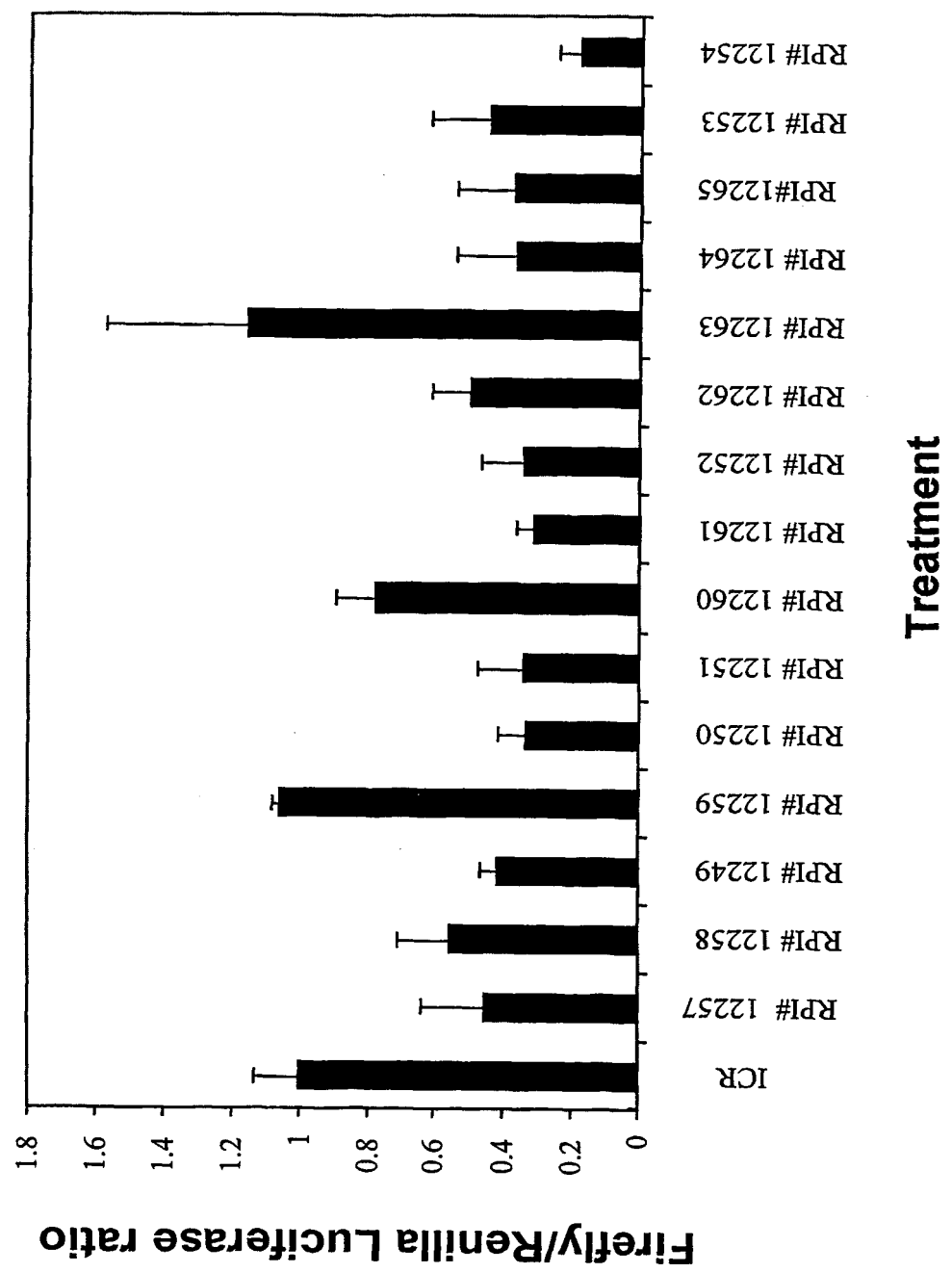
**Figure 24: Secondary structure of the HCV 5'UTR**



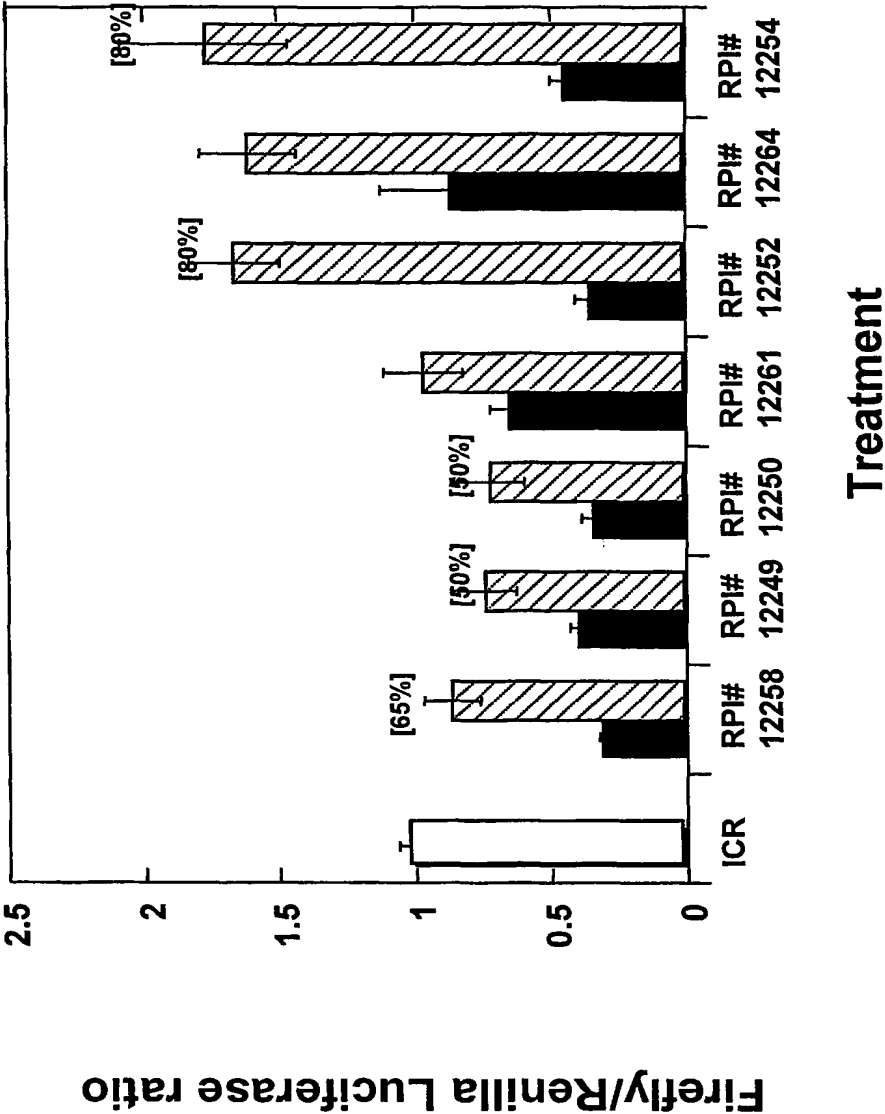
25/47



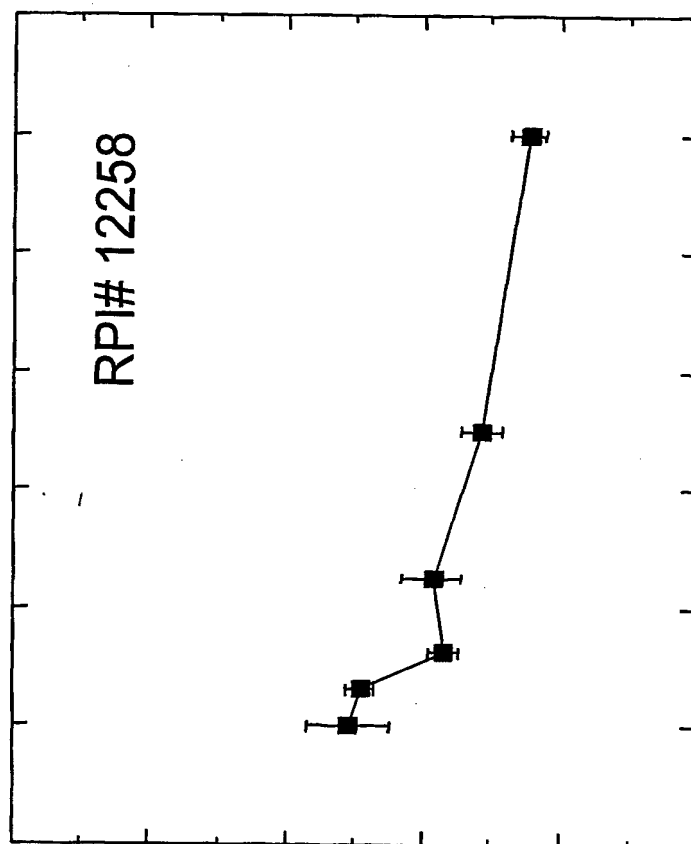
**Figure 26A: Enzymatic nucleic acid mediated inhibition of  
HCV-luciferase expression**



**Figure 26B: Enzymatic nucleic acid mediated inhibition of HCV-luciferase expression**

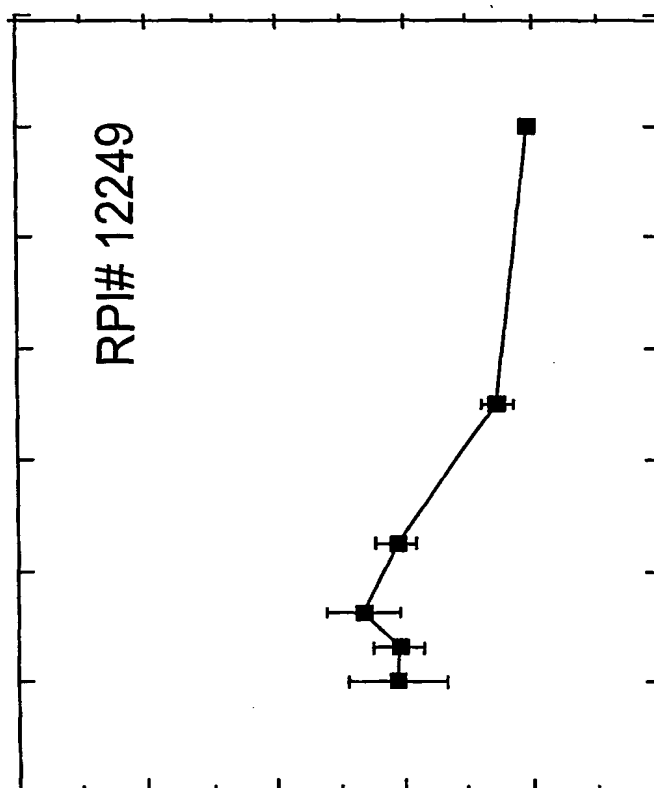


**Figure 27A: Dose-dependent enzymatic nucleic acid  
inhibition of HCV/luciferase expression**

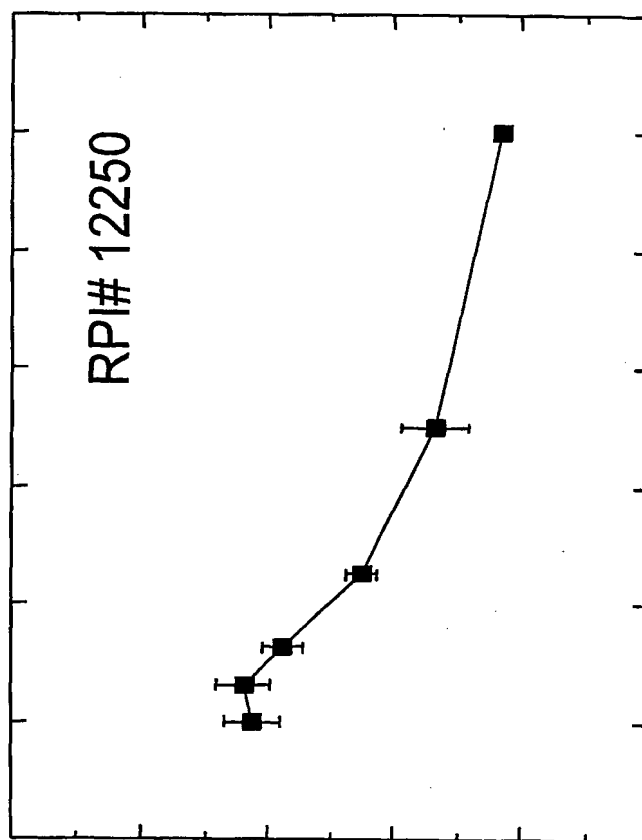




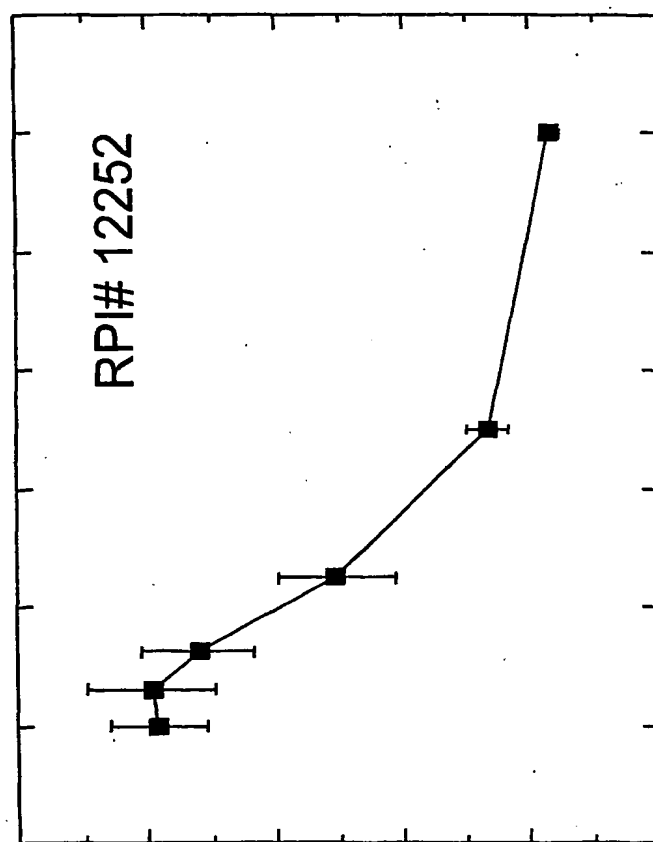
**Figure 27B: Dose-dependent enzymatic nucleic acid  
inhibition of HCV/luciferase expression**



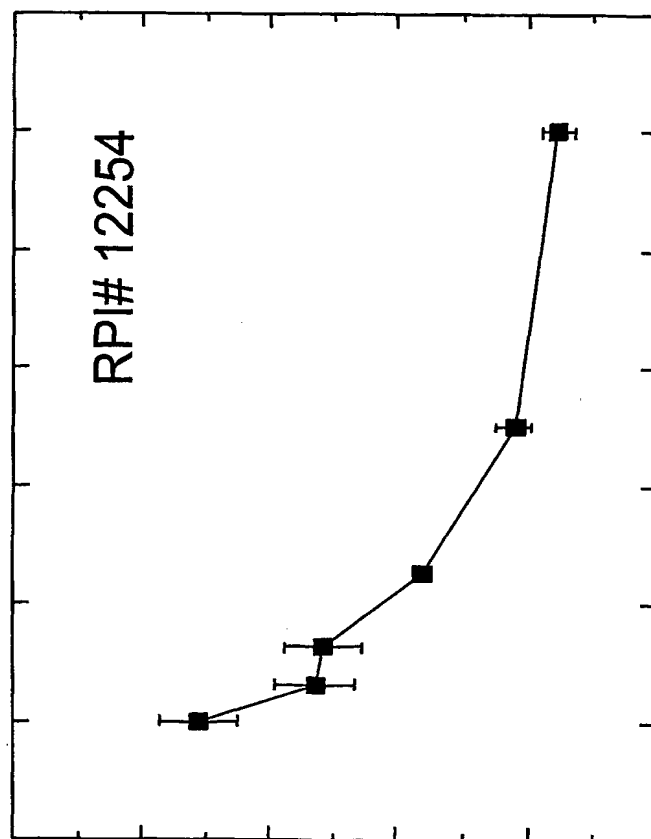
**Figure 27C: Dose-dependent enzymatic nucleic acid inhibition of HCV/luciferase expression**



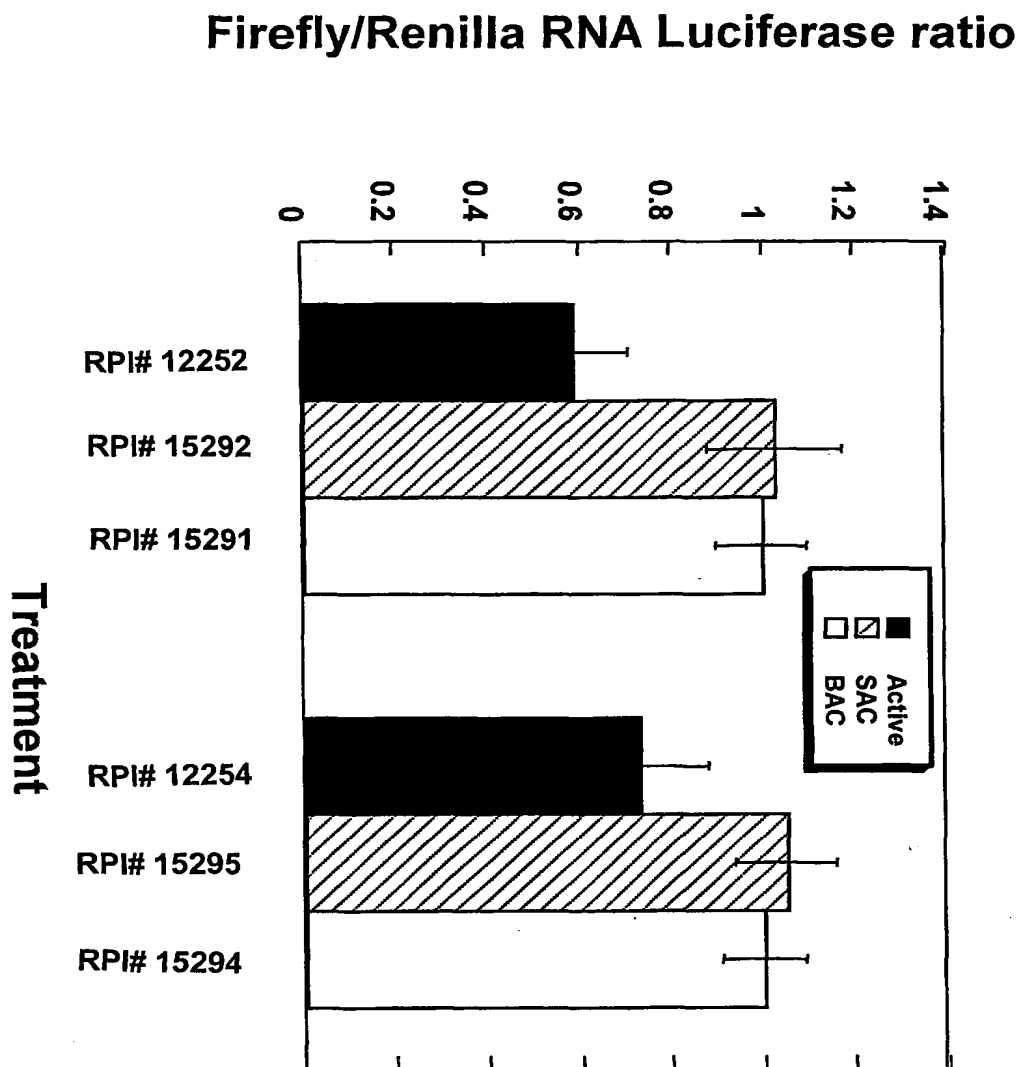
**Figure 27D: Dose-dependent enzymatic nucleic acid inhibition of HCV/luciferase expression**



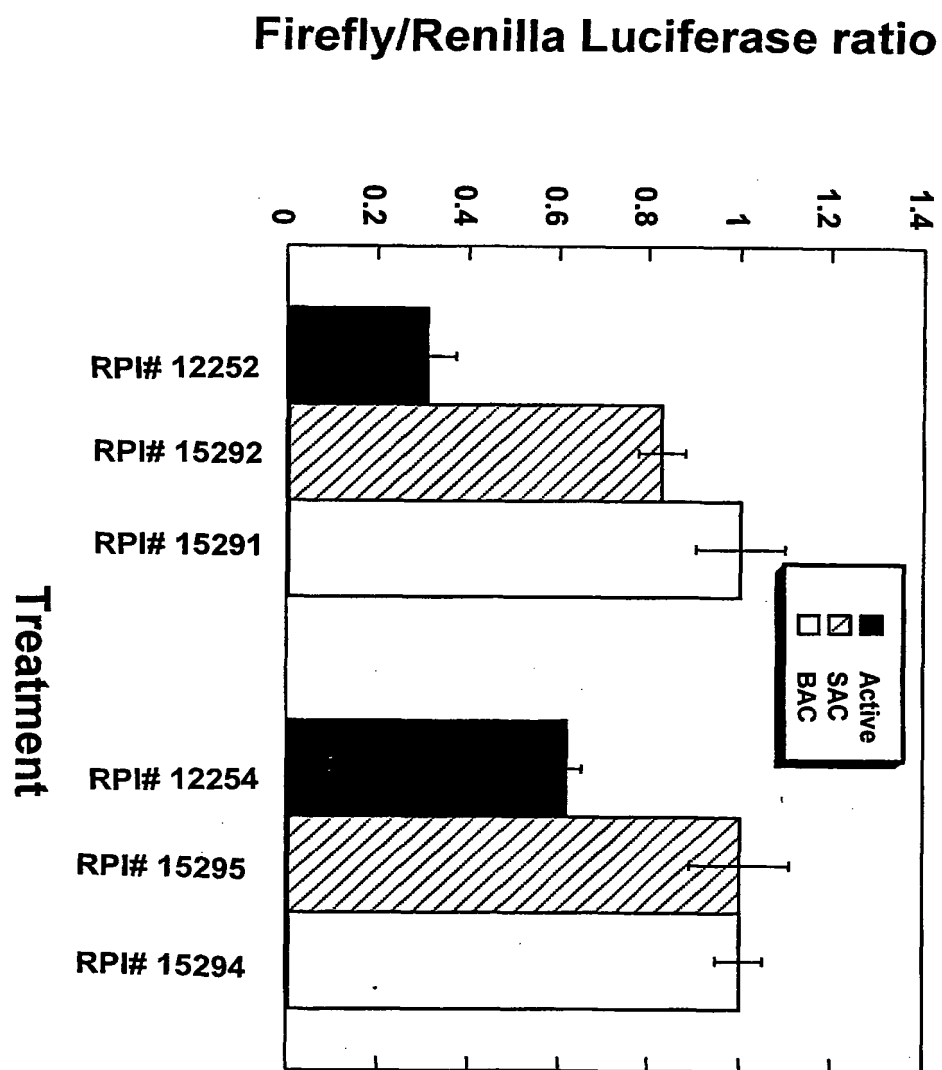
**Figure 27E: Dose-dependent enzymatic nucleic acid inhibition of HCV/luciferase expression**



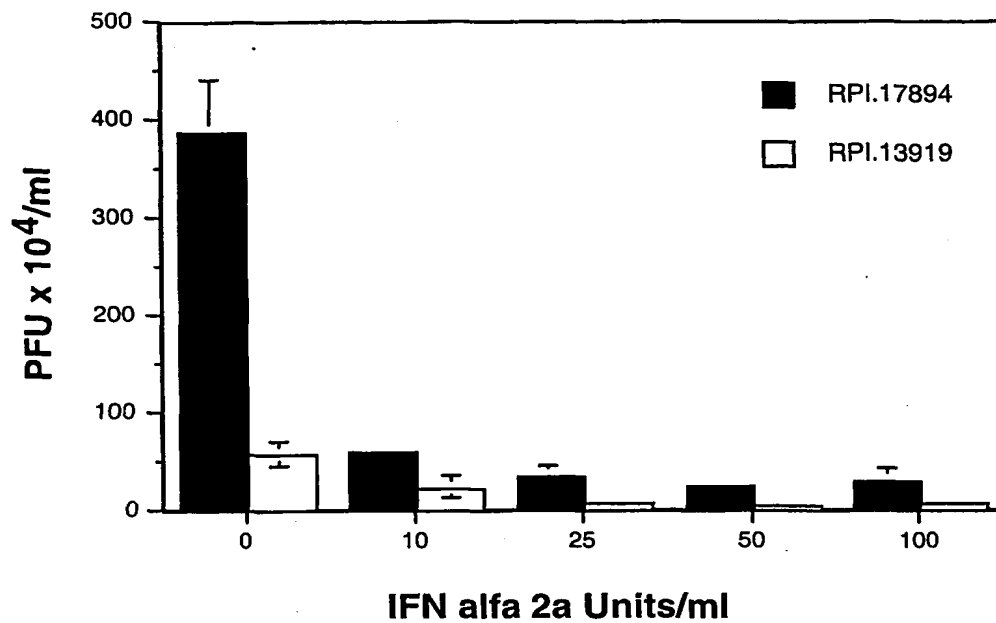
**Figure 28A: Enzymatic nucleic acid reduction of HCV/luciferase RNA and inhibition of HCV-luciferase expression**



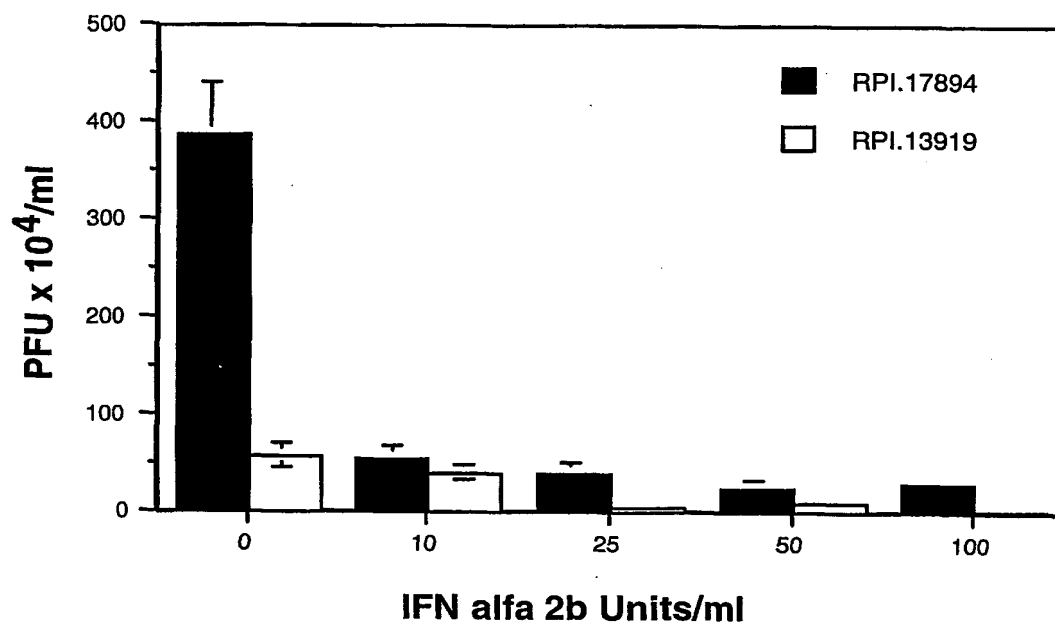
**Figure 28B: Enzymatic nucleic acid reduction of HCV/luciferase RNA and inhibition of HCV-luciferase expression**



**Figure 29A: Interferon Dose response with  
Enzymatic Nucleic Acid**

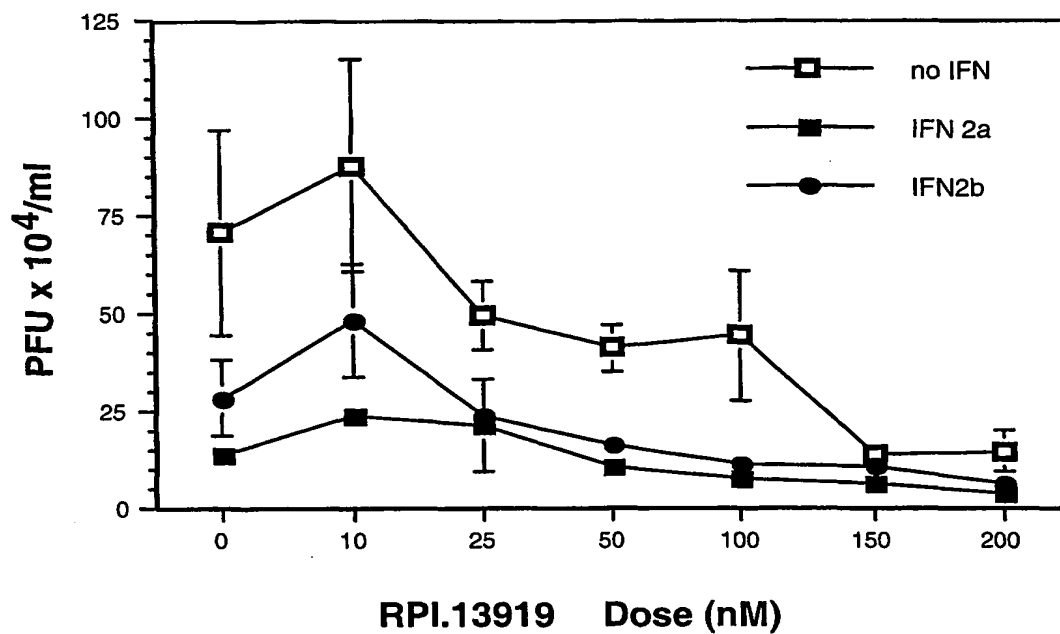


**Figure 29B: Interferon Dose response with  
Enzymatic Nucleic Acid**

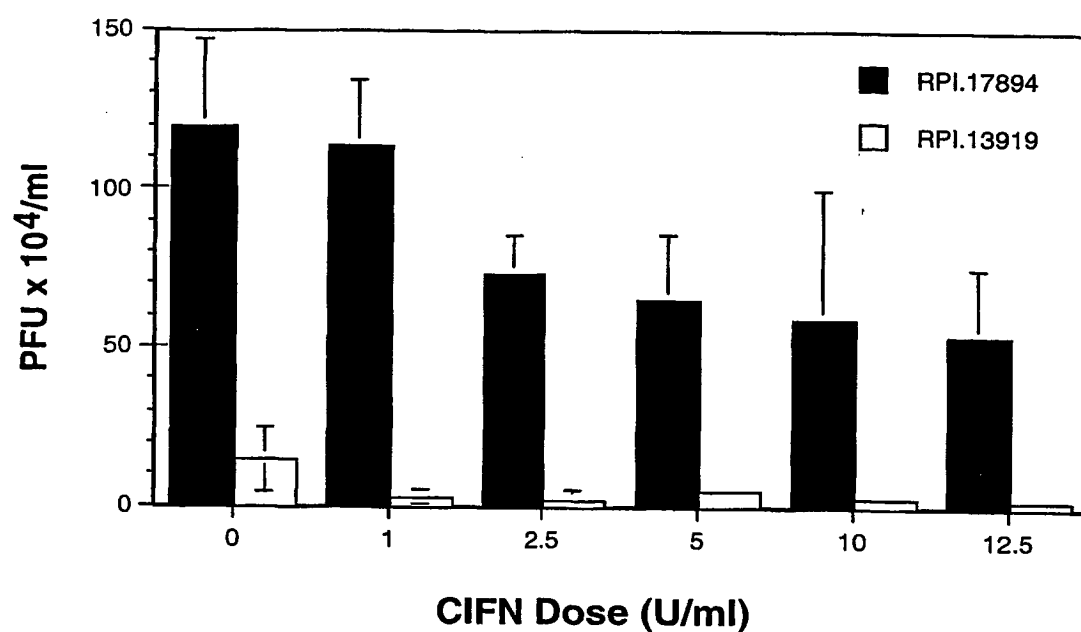




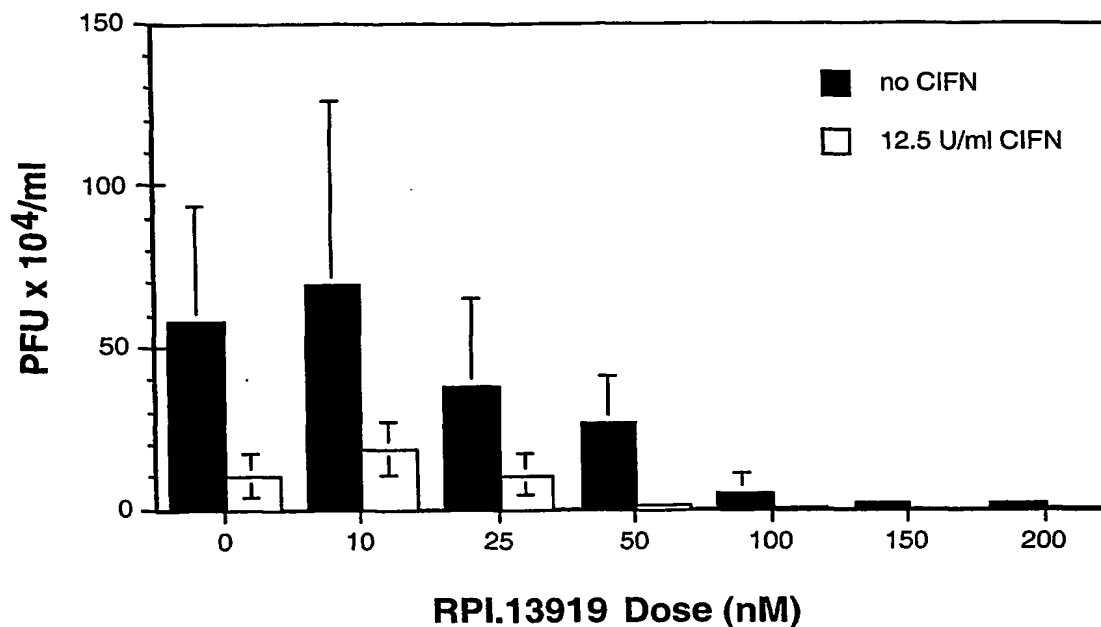
***Figure 30: Site 195 anti-HCV enzymatic nucleic acid dose response in combination with interferon pretreatment***



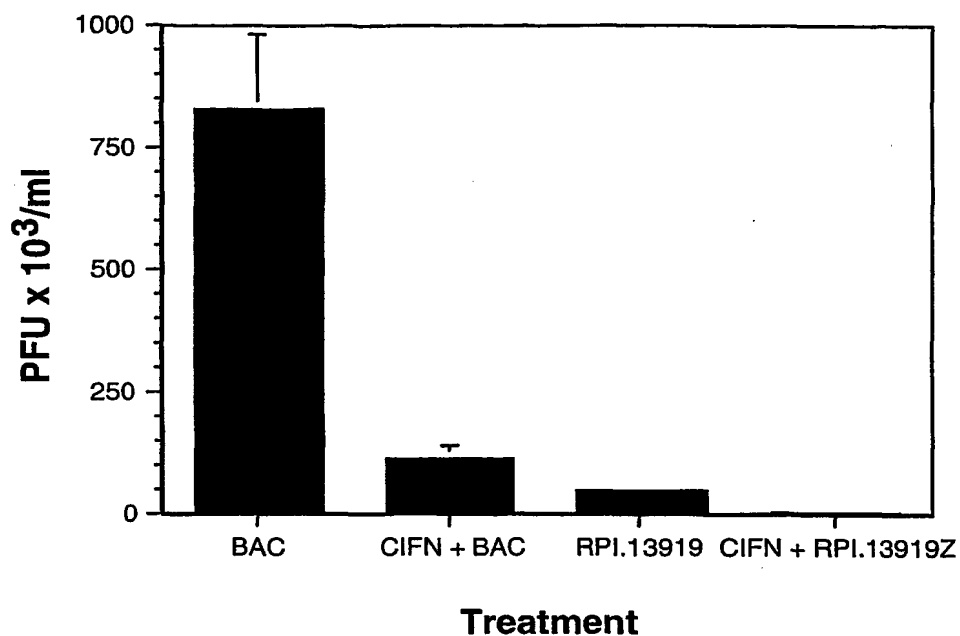
**Figure 31A: CIFN dose response with site 195 anti-HCV enzymatic nucleic acid treatment**



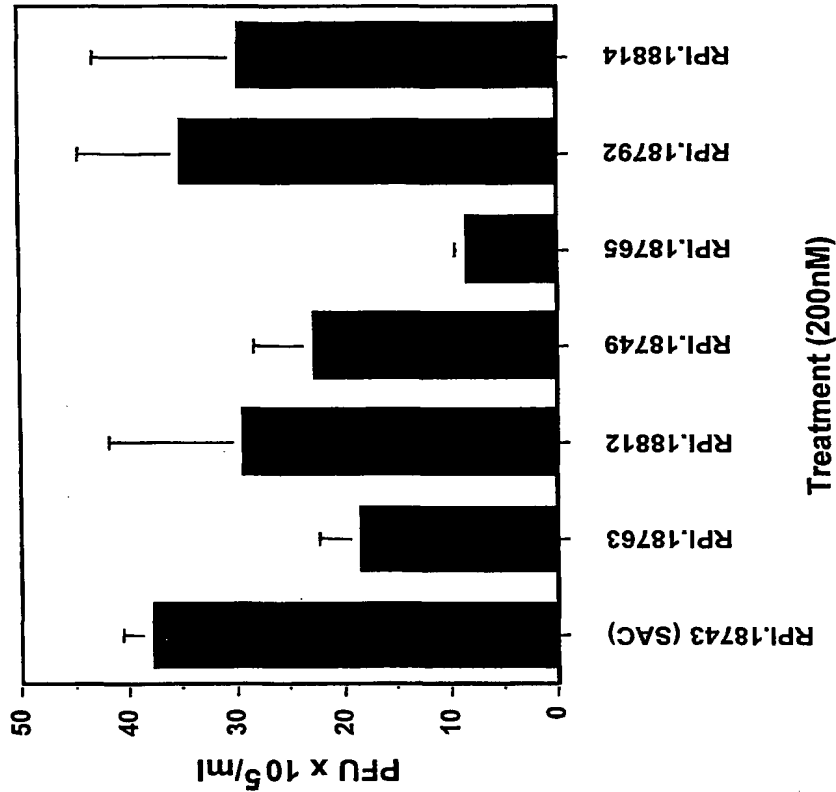
***Figure 31B: Site 195 anti-HCV enzymatic nucleic acid dose response with CIFN pretreatment***



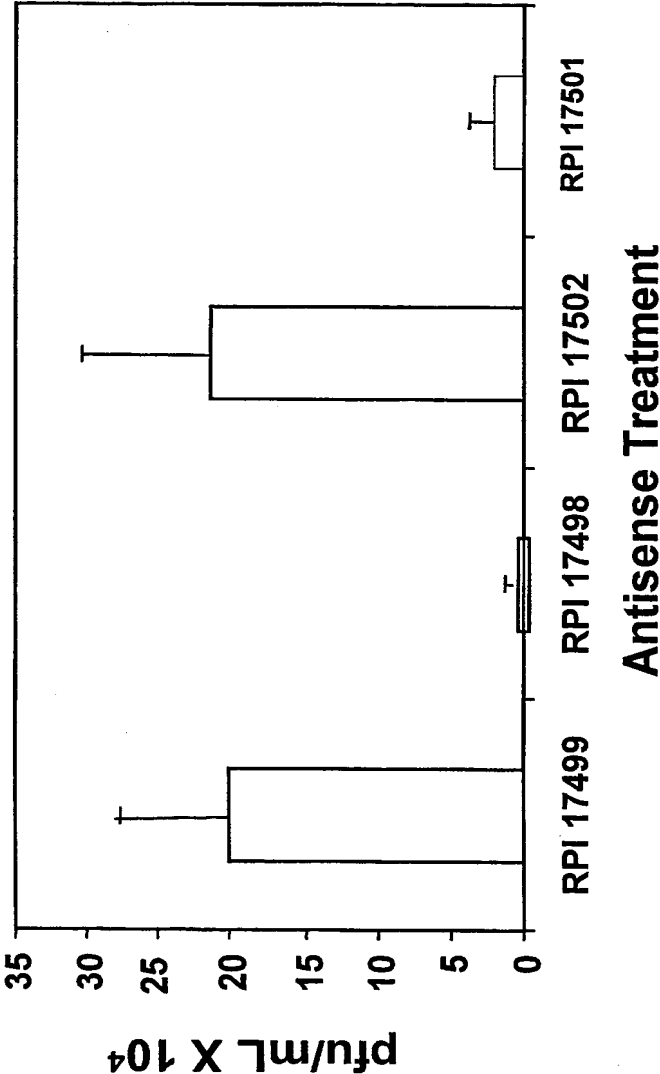
***Figure 32: Enhanced antiviral effect of an anti-HCV enzymatic nucleic acid targeting site 195 used in combination with consensus interferon (CIFN)***

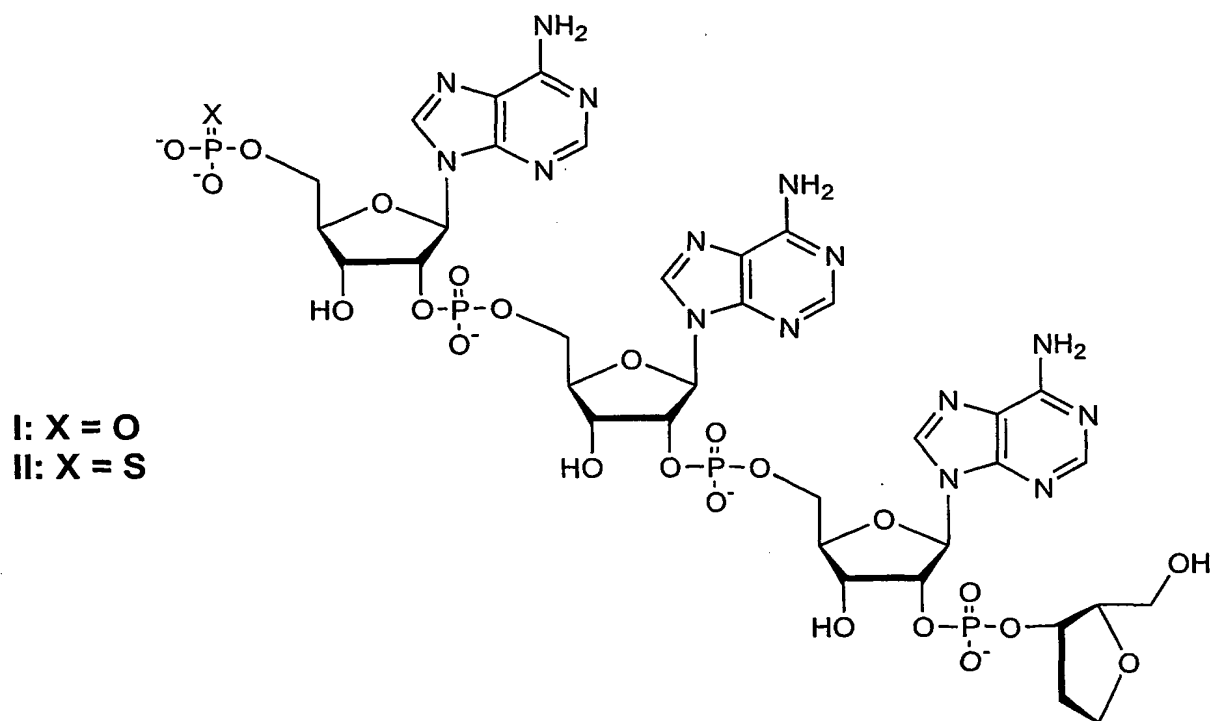


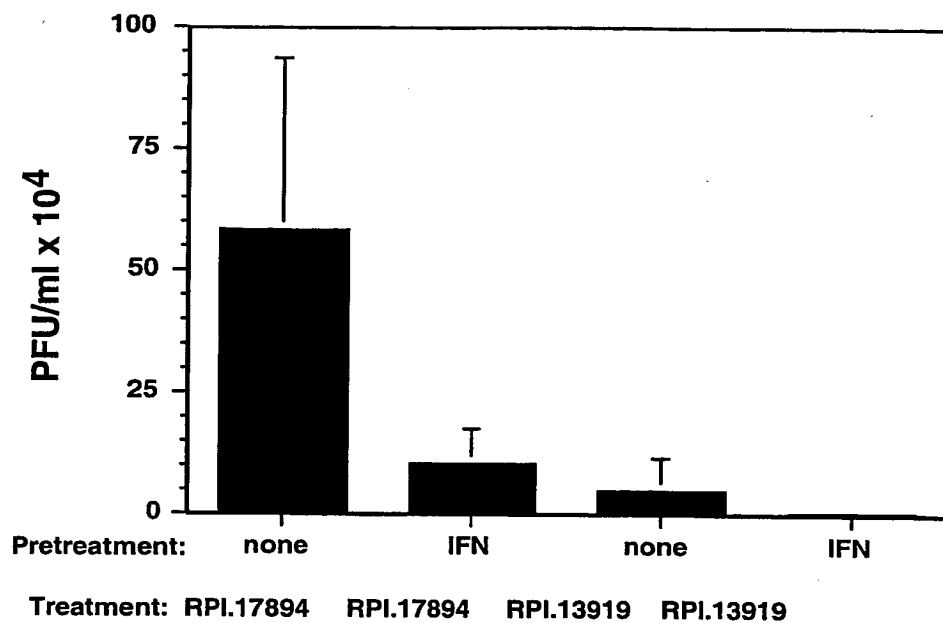
**Figure 33: Inhibition of HCV-PV Replication  
by Zinzyme Treatment**



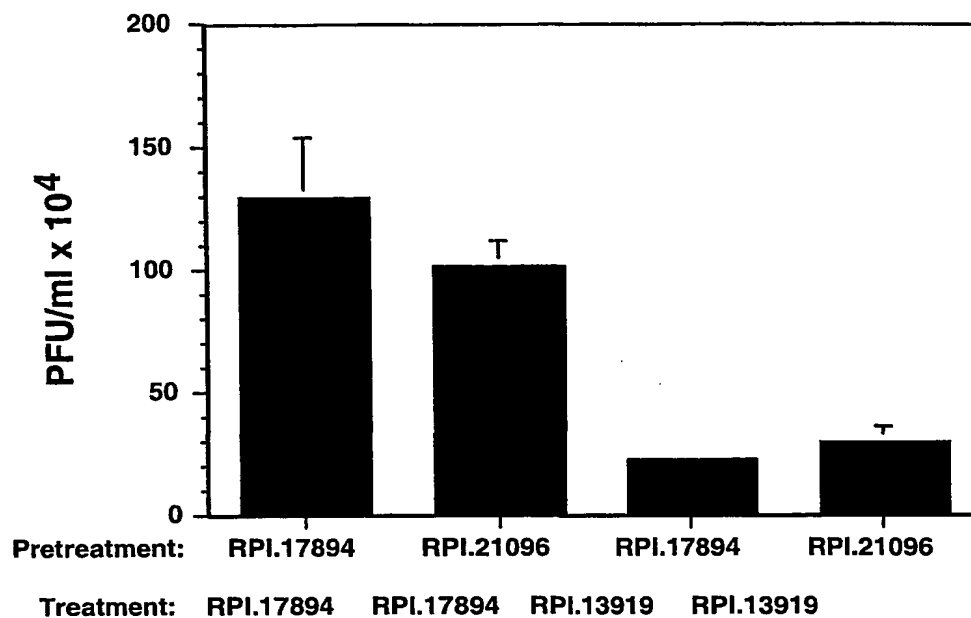
**Figure 34: Inhibition of HCV-Poliiovirus Replication by Antisense**



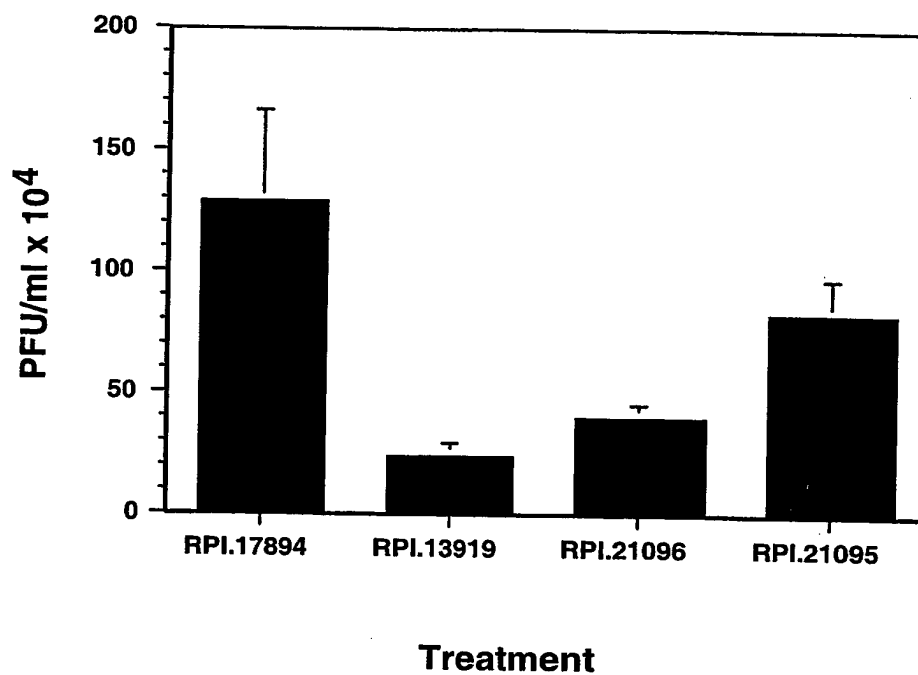
**Figure 35: Modified 2-5A Compound**

*Figure 36A: Ribozyme activity and enhanced antiviral effect*

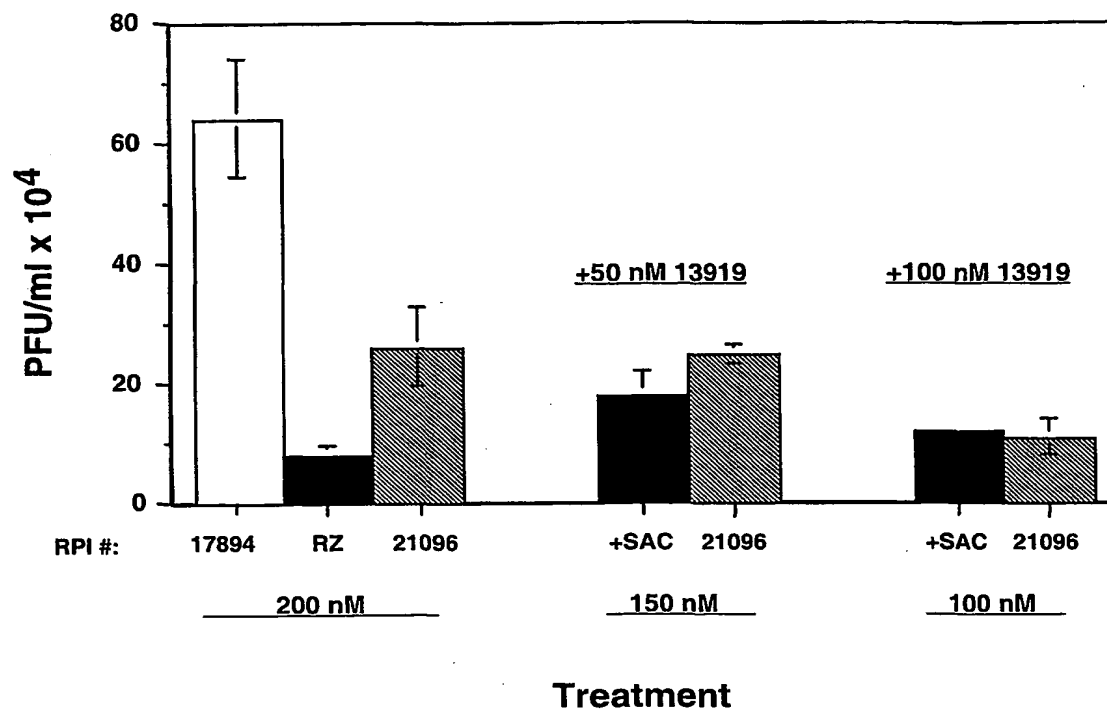


*Figure 36B: Ribozyme activity and enhanced antiviral effect*

**Figure 37: Inhibition of viral replication with anti-HCV ribozyme or 2-5A treatment**



**Figure 38: Anti-HCV ribozyme in combination with 2-5A treatment**



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US02/09187

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : C07H 21/02, 21/04; A01K 67/00, 67/033, 67/027; G01N 33/00

US CL : 536/23.1, 24.5; 800/9, 18, 3

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 24.5; 800/9, 18, 3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
WEST, MEDLINE, BIOSIS, EMBASE, SCISEARCH, CAPLUS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CHEN, M. et al. Regulation of hepatitis B virus ENI enhancer activity by hepatocyte-enriched transcription factor HNF3. Virology. 1994, Vol. 205, pages 127-132, see entire document.	49, 69
Y	US 5,980,886 A (KAY et al) 09 November 1999, see entire document.	70-86, 88-105, 107-108
Y	US 5,856,459 A (FRANK et al) 05 January 1999, see entire document.	70-86, 88-105, 107-108
Y	US 5,817,638 A (HOSTETLER et al) 06 October 1998, see entire document.	70-86, 88-105, 107-108

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"Z"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 08 SEPTEMBER 2002	Date of mailing of the international search report 20 SEP 2002
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer PETER PARAS JR Telephone No. (703) 308-0196

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/09187

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-48, 50-68, 87, 106  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:  
  
Claims 1-48 and 50-68 encompass a large number of nucleotide sequences that would place an undue search burden on the Examiner. Moreover, no nucleotide sequence listing in either paper or computer readable form has been provided by Applicants. Claims 87 and 106 recite trademarks.
3. ☒ Claims Nos.: 51-66  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1998)★

